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ABSTRACT

The four issues in this newsletter volume present information on the status and education of women. The focus of issue 1 is women and scientific literacy. Issue 2 contains the lead article, "Progress in Fits and Starts," which concentrates on the progress of women in higher education and trends in enrollment and degree completion. Issue 3 focuses on academics in relation to aging, with discussions of the labor market for women academics and the increasing enrollment of older women in higher education. Issue 4, "Connecting Women and Technology," considers the participation of women in the information technology environment. Each newsletter also offers brief articles about a number of women's issues, including gender discrimination, campus issues, and women's studies. Each issue also contains a "For Your Bookshelf" list of resources. (SLD)

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On Campus with Women, 1999-2000

Susan Reiss, Editor

V29 n1-4 Fall-Sum 1999-2000

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on campus with women

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Women and Scientific Literacy

In the mid-1980s, women received 38% of science and engineering bachelor's degrees. A decade later, that number climbed to 46%, a sharp improvement in a relatively short period. In 1995, women accounted for 38% of master's degree recipients and 31% of doctorate recipients in science and engineering. African American, Hispanic, and American Indian women, however, received just 2.8% of science and engineering doctorates, while Asian women received 16% of science and engineering doctorates. Though progress has been made, it is uneven.

While access and retention are important elements to ensure science remains open for all, what is now equally important is examining the content of science itself. Since 1996, the Association of American Colleges and Universities (AAC&U) has been working with cross-disciplinary science and non-science faculty teams at 10 colleges and universities under a grant from the National Science Foundation. The project seeks to deepen the knowledge about feminist science studies and to generate new, or modify existing, undergraduate courses where this scholarship is taught.

Those involved with AAC&U's project, Women and Scientific Literacy: Building Two-Way Streets, believe that feminist science studies is a vehicle for creating new intellectual pathways among the sciences, social sciences, and humanities. The project demonstrates how feminist science studies can be incorporated into science and non-science courses. By setting up an interdisciplinary vocabulary as well as a set of questions and a conceptual framework, it hopes to ultimately increase scientific literacy among students, whether they are science majors or not.

Thus far, the project has created intellectual excitement and more engaged teaching. Faculty have discussed how to structure courses, what questions to raise, and the kinds of problems students are asked to solve. Feminist science studies provides practicing scientists and non-scientists alike with new ways of approaching science in their courses. The project offers a new intellectual window on science and fills a niche in the much broader examination of science studies currently underway in the U.S.

Women and Scientific Literacy seeks to address a general concern about the level of scientific literacy achieved by citizens throughout the world. "The increasing importance of science in today's world calls for far greater interaction among all stakeholders and for a truly global perspective in research," wrote Federico Mayor, director-general of the United Nations Educational, Scientific, and Cultural Organization in the July 23, 1999 issue of *Science*. "By building models for doing science in a more interactive and inclusive way, we can make active partners of all the parties involved and ensure the full participation of women and young scientists."

The impetus for the Women and Scientific Literacy project emerged from Anne Fausto-Sterling's article "Building Two-Way Streets: The Case of Feminism and Science" which appeared in the *National Women's Studies Association Journal* in the fall of 1992. In that article Fausto-Sterling discusses why feminists need science and why scientists need feminism. She urges Women's Studies scholars "to face and overcome our reluctance to engage with that segment of human knowledge we call science. In order to turn our very powerful tools toward changing it we must learn more about it and develop a sympathy for the enterprise as well as a critique. . . . We scientists and students of science must take responsibility for how we create and reproduce our own systems of knowledge. If we learn [the technology of feminist analysis] instead of continuing to ignore it, and if we teach it to our students in our science classrooms, we will begin to imagine a better future for ourselves as working scientists; and we will get better at producing knowledge that meets the practical and intellectual needs of those around us."

Despite her well-drawn thesis, seven years later, Fausto-Sterling says not enough progress has been made. "We don't have any programs at Brown [University] like those developed through the Women

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faculty development

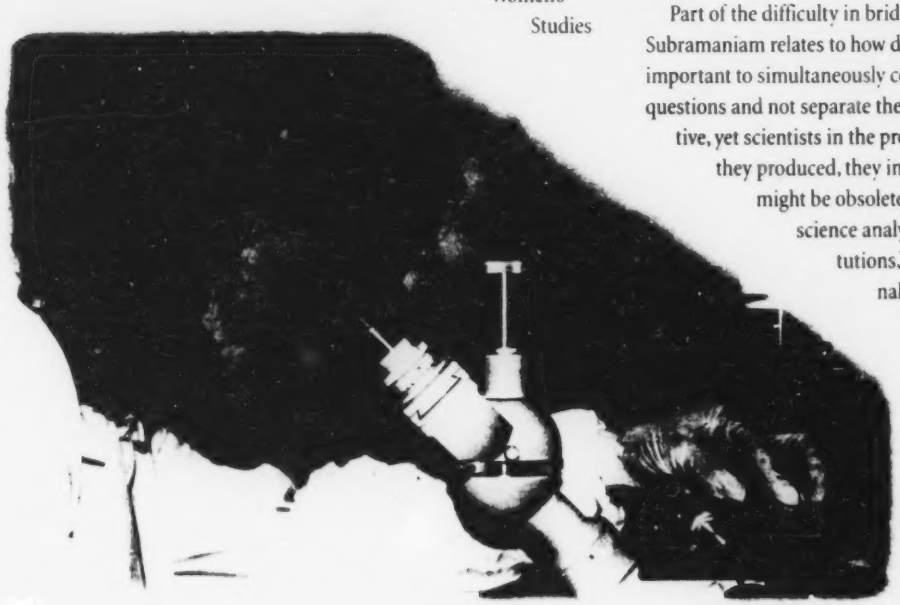
Bridging the Language Gap Across Disciplines

Communicating both orally and in writing is one of the most challenging tasks we undertake each day. Getting others to understand exactly what we mean can be daunting. Personal experiences, professional training, and shared knowledge color how we interpret words and ideas. Words have their own meaning depending on the context of our disciplines. For one trained in English, for instance, the term "analysis" has a different meaning than for one trained in biology, physics, or sociology.

One of the goals of the Women and Scientific Literacy project was to bridge the language gap between disciplines. While many in the project agree that interdisciplinary conversation is difficult, they note that those "Aha" moments, when language barriers were overcome, were well worth the time and effort invested.

"It's nothing new that every discipline has its own language," says Bonnie Shulman, an associate professor of mathematics at Bates College. "But to talk across disciplines you really have to get this. Until we realized that each field has its own questions that are interesting, we talked past each other." She points out that when scientists critique science, they examine methodologies and results, but when feminist non-scientists critique science, they examine the social and cultural contexts of the questions being asked.

To begin to create a common ground between disciplines, the Bates team held two seminars, one aimed at faculty teaching in the sciences and one for those who taught in Women's Studies. "We needed to bring the scientists up to speed on feminist dialogue," explains Shulman. "The scientists found Women's Studies scholarship opaque, filled with jargon, and not backed by evidence. Women's Studies faculty didn't expect to be able to understand the science readings and were surprised when they did."



By working through their disciplinary differences, faculty at Bates undermined the classic power relationships, Shulman says. By not retreating behind jargon and by asking questions and listening to the responses, discussions became more fruitful. "Different languages were being spoken, but we were able to listen and hear each other. All of the boundaries between us are constructed," says Shulman. "We all get trained to think in these ways."

Shulman argues that two barriers slow the flow of language from traditional Women's Studies scholarship to the sciences and back. "Either we view everything as science and it forecloses any discussion of differences between disciplines or secondly, we're only able to see our differences," she says. "We need to acknowledge and make these borders explicit in order to cross them."

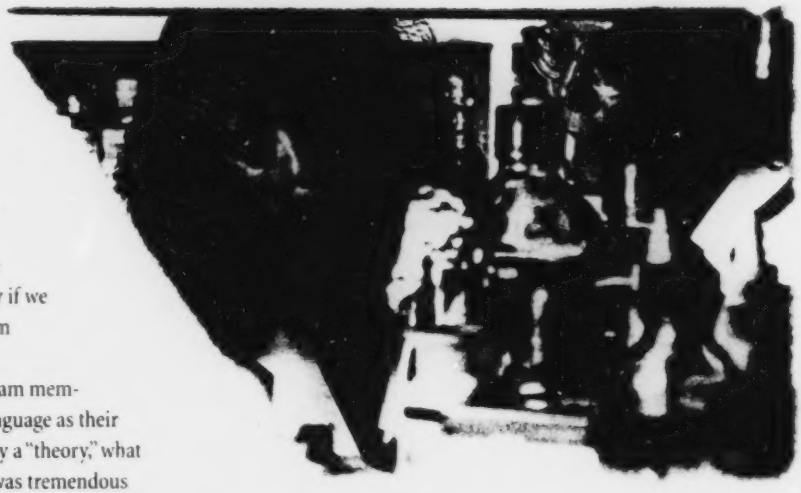
Understanding the contextual framework of both the sciences and Women's Studies provides a path to bridge these disciplines. "I took for granted the political agenda of the feminist critique. In science the ideal is to be apolitical. In feminist studies, politics is part of the context," says Shulman.

The Role of Science

"We started the project knowing it would be difficult to communicate with each other," says Banu Subramaniam, an evolutionary biologist and research assistant professor of Women's Studies at the University of Arizona. "We all have individual narratives within an institution's disciplines."

Part of the difficulty in bridging the language gap according to Subramaniam relates to how disciplines define objectivity. "For us, it was important to simultaneously consider the Women's Studies and science questions and not separate them. From the outside, science appears objective, yet scientists in the project said this is not true. The knowledge they produced, they insisted, was historically contingent and might be obsolete in 50 years," she says. "Cultural studies of science analyzed science at the level of 'discourse,' 'institutions,' and 'ideology,' but scientists had an internal narrative of individuals within the institution. They do not feel the 'power' of science that outsiders perceive. This was one of the first things we had to confront. We all saw and experienced 'science' from different standpoints."

Another difference between science and feminism relates to the contexts and questions each discipline asks according to Subramaniam. "Feminist science



interrogates everything. It recognizes that much of what we do has a history and it connects cultural happenings to scientific activities," she says. "For scientists, on a day-to-day level, it's easy to forget this."

"Academic disciplines have artificially separated the world into nature and culture. We've pretended they have nothing to do with each other. But in reality, nature and culture are inextricably connected. We ignore reality if we pretend that these areas aren't connected," Subramaniam argues.

To find common ground, the University of Arizona team members explored the depth of disciplinary divides using language as their guide. They discussed what different disciplines mean by a "theory," what each finds compelling, and how they define "Truth." "It was tremendous fun discussing five interpretations for one word. We had to name everyone's frames of reference," says Subramaniam. "The one thing all the faculty agreed on was the importance of teaching and our desire to help our students become critical thinkers." To achieve this, everyone agreed that interdisciplinary teaching was critical.

Continuing to build a bridge between disciplines requires time and money, contends University of Arizona team leader Laura Briggs. "Nationally we also need journals and conferences." Enlarging the discussion and involving more campuses is crucial. "For feminists, science has immense consequences in areas such as women's health," adds Subramaniam. "Feminist science studies is not only about getting more women into science. It's about rethinking the culture of science which creates disembodied minds and bodies. As feminists we must claim science as ours. It would be a big mistake if we give up trying to bridge the chasm between feminism and science since science can do a tremendous amount of good for women."

Easing Disciplinary Differences

Cathy Middlecamp, who teaches chemistry at the University of Wisconsin-Madison and is a member of the Women and Scientific Literacy Advisory Board, says she was "caught by surprise" by the depth of feeling about language that the project generated. "With students in my graduate seminar on teaching chemistry, I expected to hear complaints about the difficulty of reading literature from Women's Studies," Middlecamp says. "What I wasn't prepared for were the arguments—at times the expressions of anger—from scientists trying to read the same literature. Being involved in this project required the willingness to once again be a beginner."

Because each discipline values different questions, disagreements over language often revealed the cultural differences between disciplines. By observing an instructor's actions in the classroom and a discipline's culture, students learn to raise different questions depending on the field. For example, while observing a science and gender seminar taught in a Women's Studies department, Middlecamp noted that the students asked questions concerning possible gender biases, hidden assumptions, sources of benefit or privilege, and the voices that were missing. The instructor was empowering her students to question the "science" that was presented to them by both the media and scientists. "Given a similar set of circumstances, my chemistry students probably would ask a different set of questions," says Middlecamp. "They are more likely to question the chemical content, its meaning or importance, its accuracy, its implications, and its source."

As part of the Women and Scientific Literacy project, Middlecamp had an opportunity to ask students if they felt that different disciplines do teach their students to ask different questions. The students pointed out that not only do the questions vary between disciplines, but the expectations for the answers also differ. "In the eyes of the students, scientists would be more likely to seek a single answer, and, in the case of textbook problems, one that was either right or wrong," notes Middlecamp. "In Women's Studies, however, the answers were perceived as multiple and often starting points for complex discussions. The expected answers would look at the context, the circumstances, and the person doing the research."

Through her observations Middlecamp found that students were not as easily able to see the value of science to Women's Studies. For some of them, science was a difficult or even feared subject. Middlecamp discussed with these students how her own students became empowered to tackle the questions in chemistry.

Middlecamp stresses the importance of activities like the Women and Scientific Literacy Project. "This project gave us a marvelous opportunity to listen and talk with people in other fields. It was a professional experience you have so rarely," she says. "I believe as educators we share a common goal of wanting to get our students to be skeptical and think critically. On this common ground, we ought to be able to pursue an interdisciplinary conversation and begin the process of curriculum redesign."❑

institutional change

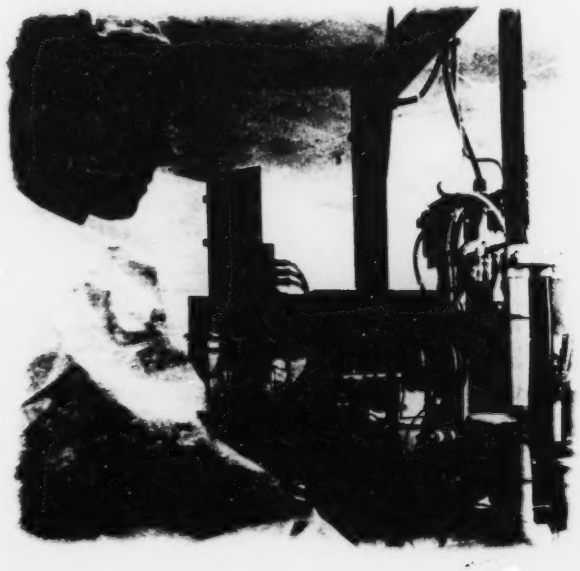
Building Institutional Support for the Women and Scientific Literacy Project

By Margaret L. Merryfield
Associate Professor of Chemistry/Biochemistry
California State University, Long Beach

All too often we may hesitate to introduce a new idea because it may not be accepted. This occurs particularly when the idea relates to cutting edge or innovative work such as that connected with curriculum transformation. For members of the faculty team at California State University, Long Beach (CSULB) a number of factors enabled them to connect with the administration and easily earn the green light to proceed.

When you begin drafting a project proposal you believe in, you hope you can convince others of its significance and earn their support. You anticipate the hurdles you may encounter and develop ways to overcome them. At times even the best preparation cannot topple the strongest critics.

As we readied our Women and Scientific Literacy project proposal, we did consider challenges that may come our way, but we also proceeded under the assumption that our administration would listen to what we had to say. At CSULB faculty governance is taken seriously, and, more importantly, the administration places a high value on consultation and cooperation. The culture at our institution also includes another important feature that is not unique to this campus but perhaps not especially common at campuses around the country—a high level of collegiality between faculty and administrators.



Getting the Green Light

Several factors helped us connect with the administration and easily win its support. As mentioned above the CSULB culture created a fertile environment for our proposal. Another factor relates to the value our project offered back to the University. We knew that the funds we were asking the University to supply greatly exceeded the dollars available from the grant. Because CSULB is a growing state university, still recovering from budget cuts in the early 1990s, it experiences stiff competition for discretionary dollars. We linked our project goals to University priorities regarding excellent teaching and meeting the needs of a diverse student population by proposing a faculty development program that involved a large number of faculty and teaching assistants. We drew active engagement from very junior faculty as well as part-time faculty, who tend to be isolated from the main stream of departments. We also linked to the newly designed General Education program, creating two new courses that will be available as General Education capstones.

A third critical factor was the choice of team members. The final team was chosen to represent various strengths. Team members represented six departments and two Colleges, and were well positioned to recruit colleagues for participation in project activities. An effort was made to include individuals who could effect curricular changes in their respective areas. Members brought expertise in various science disciplines, women's studies, science education, and assessment.

The senior team members held a variety of leadership positions on campus and were well connected to the administrative structure of the university. These positions included serving as chairs of three departments, chairing the campus body responsible for educational policy and program review, and serving as a delegate to the Statewide Academic Senate of the California State University. Because the team represented a variety of leadership roles, we had immediate credibility with the administration.

A fourth factor relates to the deans' interest in the project. The project required support from two colleges—Natural Science and Mathematics and the College of Liberal Arts. Glenn Nagel, the Dean of the College of Natural Sciences and Mathematics, initially brought the call for proposals to the attention of chairs in the college and provided College resources for the project. He has since incorporated project activities into a number of subsequent grant proposals as evidence of the College's commitment to diversity and to innovation in teaching and learning, as well as evidence of our ability to carry out activities in this area. The College's Associate Dean, Elizabeth Ambos, was one of the original group of faculty who met to plan the project, and was an active participant and presenter in the faculty development seminars. Ambos remains an advocate of the project across the campus. Dorothy Abrahamse, the Dean of the College of Liberal Arts, was supportive of the Women's Studies program and was a strong proponent of interdisciplinary teaching and scholarship. Both deans have established a climate in which the distance between faculty and college admin-

istration is minimized, and in which faculty fell comfortable bringing new proposals forward.

A fifth and most important factor in moving the project proposal forward was enlisting the support of the university's top administrators. President Robert Maxson has been a strong supporter of the sciences since arriving at CSULB and has established a policy of "watering the green spots" in support of successful programs, while leaving academic decision-making to the academic administrators and faculty. He was aware of the contributions and expertise of the faculty on the team, and commented positively on the team's composition. The second key piece of support (and the source of the actual budget commitment) came from the provost, Karl Anatol. Because several of the team members have worked closely with Provost Anatol on various projects, the team did not represent an unknown quantity. In addition, he was sympathetic to the project's goals.

Anatol recently met with team members and deans to discuss future directions for the group as well as issues for women and minorities (and especially women of color) in science, and whether there is a place for these issues in the University strategic plan. He has made it clear that if the team brings a reasonable proposal to the table, he will be supportive. This places the ball in our court, and the team is actively discussing such options as development of a mentoring program for women in science as well as ways to support new and mid-career women faculty.

Building the Project into the Fabric of the University

As the official project period ends, those of us who feel like we have just begun are seeking ways to continue our efforts. Some of these efforts include:

• "Selling" the faculty development model, with its emphasis on practical teaching strategies for highly diverse groups of students, to other projects. In essence, we are offering our newly developed expertise to the College. Several grant proposals that seek to apply these approaches on a much bigger scale either have been submitted or are in preparation.

• Including new courses (Women in Science, Science and Society) in the curriculum for Liberal Studies majors (the major taken by future elementary and middle school teachers) in the science concentration, and in the new General Education curriculum.

• Moving the project in new directions with a greater student focus. A particular area of concern has become the retention of women (especially women of color) as science majors. We would like to see an increased emphasis on mentoring of women students and improving the climate for women in the sciences, using lessons learned in the project as a base.

• Pursuing the question of whether there is a place for project-related issues in the University's strategic plan. This idea came from the provost and may move forward this year.

Lessons Learned

To garner the administration's support for a project such as Women and Scientific Literacy we've learned:

• It doesn't hurt to beg. When we asked various administrators for support, support was forthcoming (but if we had been turned down, we would have been no worse off than if we had not asked in the first place).

• To compose teams strategically, including those with expertise as well as those with influence. Our team included faculty who had existing positive relationships with various administrators, in addition to a spectrum of types of expertise.

• To take regular opportunities to spotlight the project. Although it involved a substantial number of faculty, the project did not have a high profile in all corners of the College of Natural Sciences and Mathematics. In order to raise its profile, members of the team have made a habit of using examples, lessons, or ideas from the project in a variety of larger settings.

• To invite yourself into new "loops." Along with increasing the profile of the project locally, our team members and participants have become involved in other projects with goals related to our own. For example, an invitation this summer to a team member to discuss a project with a Latino student retention focus will likely lead to opportunities to incorporate ideas from our project into a new area.

This piece was written in consultation with Patricia Rozee, Laura Kingsford, Toni Stanton, and David Whitney, who are all members of the CSULB team.❑

curriculum transformation

The Transformative Power of Feminist Science

By Beth Erviti
Associate Professor of Biology
Greenfield Community College, Greenfield, Mass.

Put a group of faculty together, let them talk shop, and if you listen carefully, you soon realize that the most average of semesters offers a wide spectrum of classroom highs and lows. In the Spring of 1998 I realized the semester I faced was nothing short of an adventure. As an investigator in the Women and Scientific Literacy project, sponsored by AAC&U, I was about to teach a course I had never taken, about a topic I had never studied.

This adventure began as a result of Greenfield Community College's (GCC) need to offer a science course that would be accessible to science-phobic students, stimulate an appreciation for the contribution of women in science, and satisfy a laboratory course core requirement. We established a syllabus that began with an examination of the history of science. In particular, we decided to study the structure of culture, economy, and politics from prehistory to the present and to put these aspects of civilization into the context of gender, religion, and an emerging foundation of science. We moved from there to issues of contemporary science education and career options for women. We designed the last portion of the course to deal with current trends in science research and ethics. As much as possible, we wanted to present this course through the lens of feminist science.

These were lofty goals for an instructor who is not a feminist scholar, had never taught outside of the classical lecture format, and had never researched the history and development of science. I confess I was scared.

But the class, "Women in Science," filled with 15 women and 3 men, and we were off and running. In retrospect I realize that much of the classroom flow grew spontaneously from our collective energies: a combination of form without rigidity. From discussion in one class I would generate an idea for the next class. These students were mostly strong in the humanities, so we used their strengths. We formed debate teams and discussed the question: Is Science perpetuating the split between intellect and emotion (mind/body)? After a lab culturing microorganisms from their skin, students wrote poems about the experience and then examined the importance of "seeing" science through poetry. After reading about the incorporation of gender in the language of science, we used scientific terminology to write about an unknown organism, examining our descriptions for bias. In lab we did bacterial transformation experiments and in class we debated and discussed the emerging science of cloning and its ramifications. We discussed and debated the cultural, moral, and economic ramifications of intellectual property rights being extended to plants and genomes. We also explored the effectiveness of herbs as antibiotics and linked this with the importance of women as naturalists, healers, and herbalists throughout history. After developing an interview format designed to explore the journey of women working in science, each student interviewed a woman scientist and reported back to the group. By the end of the semester, students designed, conducted, and presented their own research project.

Thinking back to the start of that semester, when taking on this course was somewhat like stepping into the abyss, I realize how rewarding the experience has been.

I was fortunate to have had the support of my colleagues at GCC and the creative and dedicated staff administering this AAC&U grant. With their help I was able to put together a reading list that included Vandana Shiva, Londa Scheibinger, Bonnie Spanier, Mary Morse, and others. Readings, support, and the students themselves, helped to make the class's debut successful. In the final weeks of the class, students demonstrated their ownership of the class by attending a focus group designed to evaluate the class and suggest changes to improve it.

It was certainly challenging to allow students the freedom and spontaneity to join in the creation of this experience. The distinction between teacher and learner all but dissolved as my role became more facilitator than authority. I learned a great deal that semester. I learned much about the development of scientific thought and about the contribution of women scientists/pioneers/philosophers who have added and still add an unforgettable dimension to science. These lessons have added substance to my personal understanding of science and I look forward to teaching "Women in Science" again. ❑

women students today

Blending Science and Women's Studies: A Student's Perspective

Martha Whitaker is a doctoral candidate in hydrology at the University of Arizona. In her spare time she participates in 100-mile bicycle events and takes classes in Women's Studies. For her, combining vocation with avocation is a delicate balancing act.

Although she's viewed as the hydrology department's "resident feminist" and her colleagues are aware of her feminist-related activities—she has served on the university's Commission on the Status of Women, and has been vocal about the current movement in the state legislature to reduce funding for Women's Studies at Arizona—Whitaker has preferred not to speak openly about her involvement in Women's Studies. "I don't hide what I'm doing, but I don't advertise it either," she says. "In any scientific discipline, when you take part in anything outside your discipline, you are often viewed as being less serious about science."

To explain her motivation about not openly discussing her extracurricular activities, Whitaker tells the story of a colleague who participates each year in a 111-mile bicycle race around the perimeter of Tucson. For the past three years, her colleague's biking times have earned gold rankings. In a hallway conversation about the race, the colleague's adviser offered that the man might get a platinum ranking next year but then quickly added that training for another year might divert the colleague's focus and lengthen his time to degree.

Whitaker does note, however, that she has received support from within her department. When a letter to the editor appeared in the *Arizona Daily Star* a few years ago denouncing the Arizona Women's Studies program Whitaker's hydrology adviser saw the letter and asked her, "As a woman, what do you think of this woman's letter regarding Women's Studies?" After their discussion, Whitaker's adviser suggested she write a letter to the *Daily Star* describing her views. As a result, many of the hydrology professors learned of Whitaker's participation in Women's Studies. This year when an Arizona state legislator began calling for reduced spending on Women's Studies activities and renaming the program Lesbian Studies, Whitaker voiced her concern about the legislator's ignorance and associated Draconian threats.

For the AAC&U Women and Scientific Literacy project in which Whitaker participated, the department provided funding to bring in sociologist Maralee Mayberry and geologist Margaret Rees, both from the University of Nevada, Las Vegas, who described their co-teaching model that bridges the sociological and geoscientific disciplines.

"When I began examining feminist critiques of science, I was extremely suspicious of them and was rigid about what is meant by 'objectivity,' 'truth,' 'validity,' and 'bias,'" says Whitaker, who will finish her doctorate in the spring 2000. "The Women and Scientific Literacy project helped me to think about teaching strategies in both Women's Studies and hydrology and to have the courage to implement them. The project has raised my awareness of the importance of providing a political and social context for science. I've also come to trust feminist critiques of science more than I did before," she says.

"Through the Women and Scientific Literacy project my pedagogy in hydrology has improved," says Whitaker, who was recently given the opportunity to teach a 400-level course in subsurface hydrology. "I try to ask questions that will validate the students' experiences and to acknowledge that they have experience that is useful. Students get used to the fact that I expect our exchanges to be more like a conversation rather than a lecture."

In her Women's Studies classes, Whitaker is viewed as the "resident scientist" who is on the watch for studies that may present data in such a way that it should be questioned. As part of the Women and Scientific Literacy project at Arizona, several interdisciplinary, team-taught classes were developed. Whitaker is now teaching "Cultures of Biology, Medicine, Gender, and Race," a course developed by Laura Briggs, assistant professor of Women's Studies, for the project. "I'm trying to teach students about statistical concepts and to examine, for instance, how words like 'bias' and 'theory' hold different meanings for scientists compared to non-scientists," she explains.

In the future, Whitaker would like to teach a course covering the scientific, political, and social aspects of current water issues, projects, and policies that span local and international concerns. She'd also like to develop a hydrology text that embraces context, admits bias, and makes clear that important scientific data can be gathered from such work.

While Whitaker feels that participating in the Women and Scientific Literacy project has helped improve her teaching, she still prefers not to bring up her participation in feminist-related activities with science colleagues. "Maybe not being overt about Women's Studies has to do with knowing that I'm going against the grain of a major paradigm in science," she says. ❑

campus climate

Science and Engineering: Are Women of Color Falling Through the Cracks?

As a group, African American, Hispanic, and American Indian women earned 2.8% of U.S. science and engineering doctorates awarded in 1995. Asian women earned 5.8%. Despite a handful of women who have risen to prominence, the majority of women of color in science "have fallen through the cracks," says Evelynn Hammonds, director of the Program in Science, Technology, and Society at Massachusetts Institute of Technology. "Most programs for women in science often target white women and programs for minorities in science often target black men."

Increasing the number of minority women in science is important, but what is especially critical now according to Hammonds, is creating academic environments that encourage minority women to finish their degrees and, at the same time, nurture their enthusiasm for science and engineering.

"Less effort has been spent [in the last 20 years] on taking care of students once they are in school. I think there is something amiss when students who start out interested and eager to pursue scientific careers end up demoralized and creatively spent. If they don't want to do science anymore, what have we achieved?" asks Hammonds, who notes that many programs developed over the last two decades which target women and minorities in science and engineering focus only on access. "We need to evaluate the effectiveness of mentoring, how engaged students are in research at the undergraduate level, and how consistent the attention they're given is over time. There is no single program that addresses young women of color all the way along their career."

Hammonds envisions a.. approach that would produce a new generation of creative scientists motivated to pursue whatever path their scientific inquiry suggests. "We need new ways to bring students together," she says. "Something like a science club would enable students to talk about what's going on in their field rather than focusing on finishing problem sets. Students spend too little time talking and brainstorming about interesting projects."

Sometimes these women may be the only women of color in their field in the nation.

From Degree to Tenure

For those who make the transition from student to faculty member, new obstacles arise. Isolation has become the key issue facing women of color in science. "This occurs both institutionally and within disciplines," says Hammonds. "Sometimes these women may be the only women of color in their field in the nation."

Networking helps counter isolation and can become an important source of support for faculty so that people can ask nitty gritty questions such as "How do you run your lab?" Hammonds points out, however, that to get the maximum benefit from networks it is important to connect with people in the same field on a regular basis. "The demands of the modern research university are such that it's hard to make time to meet people in your field." says Hammonds.

Another factor affecting women of color is the load they carry professionally. These women teach, hold committee positions, do research, and often act as advisers to students of color who may be in different fields. "You see an accumulating effect," says Hammonds. "A lack of women of color on the faculty means that the ones who are there pay a heavy cultural tax."

One of the goals of the Black Women in the Academy conference held this past summer in Washington, D.C. was to create a forum where women of color in the sciences could meet others in their field and in different fields. Hammonds wants to build local and regional networks so that when the next Black Women and the Academy meeting is held, the science track can be framed by the issues raised in those networks.

Several of the plenary speakers at the 1999 meeting discussed what women of color experience in the sciences and how they can overcome some of the obstacles they encounter. One speaker, Shirley Jackson, former director of the Nuclear Regulatory Commission and now president of Rensselaer Polytechnic Institute, was the first African American woman to earn a Ph.D. in physics in the U.S. Jackson spoke about the important role her family played in supporting her and told a story of how once during her time at MIT, a professor suggested that girls of color should learn a trade, and Jackson said she did—theoretical physics.

"What I'd like to see is a great deal more sensitivity to the impact that race and ethnicity has on science," says Hammonds. "We need to understand that there is a difference, though not a fundamental divide among race and gender."

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campus climate

Improving Gender Equity through the WISE Initiative

This year marks the final phase of another national initiative to improve gender equity in the sciences, engineering, and mathematics (SEM). Sponsored by the National Science Foundation, the Committee on Institutional Cooperation Women in Science and Engineering (CIC WISE) Initiative targets upper-level undergraduates, graduate students, and faculty women in SEM fields. Partners in the CIC WISE Initiative come from members of the CIC, an academic consortium of the Big Ten Universities and the University of Chicago.

The CIC WISE Initiative has tried to implement pedagogical, curricular, and other reforms to improve the academic environment and the quality of science education for all students through its "Best Practices" workshops. It also seeks to better prepare individual women in SEM fields to advance in their academic and professional careers. The latter has been achieved through travel grant competitions, leadership conferences, mentoring programs, and the publication of the *CIC Directory of Women in Science and Engineering—Ph.D. Candidates and Recipients, and Postdoctoral Appointees.*

The first WISE conference was held in 1992 as a way for the CIC institutions to begin thinking about how to improve the environment for women in SEM fields. "We considered what we could do as a group and that's when we came up with the Best Practices idea," says Jean Girves, CIC associate director. "The NSF grant has greased the wheels for us. We have been able to develop relationships with people across institutions and at multiple levels within institutions. This brings credibility to what we're trying to do and builds a critical mass so that the burden isn't carried by a single WISE representative."

Best Practices for Mentoring

The WISE Best Practices Workshops address institutional change by featuring effective programs for advancing women in SEM fields and for improving campus climates. The workshops emphasize how to transfer a successful project and provide the sustained support needed to fully implement it at other CIC institutions. These programs provide detailed information on program content, climate, management, infrastructure, finances, and assessment so that those attending the workshops can adapt programs at their own campuses (see *OCWW*, Fall 1997).

The latest Best Practices Workshop examined mentoring programs. Held in May 1999 at the University of Wisconsin-Madison (UW-Madison), organizers highlighted the campus's university-wide faculty and academic staff mentoring programs. "Mentoring cuts across all fields and is a hot issue," says Girves.

What is unique about the UW-Madison program is its three-pronged approach. The university offers the Departmental Faculty Mentoring System, the Women Faculty Mentoring Program, and the Academic Staff Mentoring Program. It was the success of the Women Faculty Mentoring Program that led to the development of the two other programs.

The Women Faculty Mentoring Program was created in 1989 by Robin Douthitt, professor of Consumer Science, to lessen the isolation of women faculty and improve retention. At the time, Douthitt was untenured. The program was adopted into the Office of The Provost and Vice Chancellor for Academic Affairs in 1990 and is now supported by that office and the Office of the Secretary of the Faculty. During the winter of 1991-92, the UW-Madison Faculty Senate passed legislation requiring departments to provide a mentor or guidance committee to assist each untenured faculty member in meeting departmental responsibilities and preparing for tenure.

"When the program started, the tenure and retention rate for women was roughly half of what it was for men. Retention and tenuring are now equal," says Janet Hyde, former director of the Women Faculty Mentoring Program. "I'd like to attribute that to the mentoring program." The program pairs untenured women faculty with senior women who share the professional and personal interests of their proteges but are removed from the tenure and promotion processes. It is intended to compliment departmental mentoring. "This arrangement allows the untenured woman to ask questions and admit mistakes without fear that it will impact her tenure," says Hyde.

Assessment comes in the form of regular program evaluations and a survey of active participants every two years to determine whether the pro-

Continued on page 14

Much Needed Advice

Antonia Schleicher, now an associate professor of African Languages and Linguistics, says her three years in the program gave her the information she needed to perform. "The major benefit of the program was that it gave me a place to go outside of my department to discuss difficult situations which I couldn't discuss with those in my department and to get an honest opinion," she says.

Her mentor, Jane Zwengler, a professor in the English Department, advised Schleicher where to publish and could link her to senior people in the university. "My mentor knew the system and gave me information that I wouldn't have known," she says which was particularly helpful when her husband, who moved with Schleicher to Wisconsin, needed a job. "If he hadn't gotten a job, I would have left," she says.

Her advice for those seeking mentors:

- Look outside your department,
- Find someone who is well connected and who has been through the tenure process
- Choose someone who shares an interest beyond work such as sports, family, or travel.

Information on the Women Faculty Mentoring Program is available at www.wisc.edu/provost/women/mentor.html.

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new learning

Voices from the Women and Scientific Literacy Project

The following perspectives provide details on how the Women and Scientific Literacy Project changed individuals and institutions.

"As a direct result of my participation in the Women and Scientific Literacy Project, I am now aware of the new scholarship on science education and have come to appreciate different 'ways of learning.' I have incorporated into my classes teaching approaches that enhance women's participation in the interactive learning process. The project also made me acutely aware of the critical importance of mentoring for most women's success in science and has helped me to hone my mentoring skills. In developing the 'Women in Science' course, I gained a high regard for women scientists who overcame substantial obstacles and went on to make remarkable contributions to science. I share these women's stories and their scientific accomplishments with my students at every opportunity."

—Toni Stanton, Professor in the Department of Biological Sciences, CSULB

"The Women and Scientific Literacy Project was great for making me even aware that a feminist philosophy and epistemology of science exists. I still don't understand it all, but certainly can appreciate the views expressed by my colleagues. My life has been enriched by meeting and becoming acquainted with colleagues in Women's Studies. My interest in pedagogy has been rekindled and I have incorporated more interactive and group activities in my classes. Participation in this project has made my life in academia more fulfilling."

—Carol Itatani, Professor in the Department of Biological Sciences, CSULB

"I went in with my own agenda, wanting my science colleagues 'get' the point of feminist critique and incorporate it into their classes, and I wanted to get Women's Studies people to see how science permeates culture and why we need to have data. I realized that if I wanted true communication to take place, and I wanted others to acknowledge their agendas, I had to acknowledge mine. We all had to challenge our deeply cherished beliefs."

—Bonnie Shulman, Associate Professor of Mathematics, Bates College

"We realized that the fastest learning takes place when a faculty member is a minority member of a mixed group. Elizabeth Tobin, a historian and team member who has taught Women's Studies courses, said she felt that she learned much more when she was one of a few non-scientists in a seminar, simply by virtue of being forced to deal regularly with scientists' habits of mind. At least one of our science faculty members believed he had learned more when he was one of only a few scientists in a group with many Women's Studies faculty.

Most importantly, we need to remember that building two-way streets is a long-term project, which will require repetition and multiple years."

—Bates College Team

"At St. Lawrence, scientists have become more engaged in curriculum transformation than Women's Studies faculty. A critical step for furthering the work of Women and Scientific Literacy might be to bring more people from Women's Studies who are not scientists into the conversation. A national conference/workshop for Women's Studies faculty with little (recent) background in the sciences would be very useful."

—St. Lawrence University Team

"More than 100 faculty participated in our project as well as hundreds of students; we've definitely had an effect! What made this project especially successful was the unusual climate of cooperation, communication, and collaboration. . . .Most significantly, participants were eager—despite their time-constrained schedules—to share experiences across seemingly disparate disciplines, and subsequently collaborate with each other.

The biggest obstacles were the bureaucratic forms/policies that make it difficult to co-teach or even to introduce new courses. Because of faculty time constraints, we were challenged to continue re-inventing the project and recruit new participants—both of which have been positive experiences."

—University of Arizona Team

"Overall there was general agreement that feminist ideas belong in science studies courses, that issues of gender and science can be introduced in Research Seminar and Senior Seminar science courses, and that science topics should not be neglected in Women's Studies courses. Modules on gender and science were successfully added to these courses. There was less success in convincing science faculty, including Project faculty and those attending the faculty seminars, that science studies issues, including epistemological issues and those of gender and science, could be or should be introduced into science lecture classes.

The project has heightened awareness of the low enrollments in science courses by anyone other than pre-meds, and has also identified and made public the serious problems that female science faculty face at a small institution."

—Barnard College Team

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"Our project has solidified support for this area of curriculum development among administrators who provided seed money in the form of matching funds. We have created a core team of faculty who have a history of working together and are committed to pursuing funding to support further faculty development and curriculum innovation. Our student surveys have revealed a persistent discomfort with science among our incoming freshmen which should drive the institution to invest more resources in improving science education.

A feminist science studies course we developed has been approved as a regular catalog offering which fulfills the general education science requirement for the bachelor's degree. Its acceptance as a science course normalizes feminist science studies in the natural science curriculum. As this course will also be accepted for Women's Studies credit, it infuses the study of natural science into the Women's Studies curriculum."

—Portland State University Team

"This grant has facilitated interactions between faculty in the humanities, social sciences, and sciences, disciplines that were not readily in contact previous to this experience. . . . While we lost some members of the [Faculty Development] seminar, we recognized that we can't reach everyone and concentrated our efforts on those who were and are positive and amenable to curricular and institutional change. . . . Many team members were promoted during this grant period indicating that participation in a gender and science grant was not deleterious to one's academic career. There have been few adverse outcomes or stumbling blocks to the implementation of the grant by those who have been active, though there has been resistance on the part of some seminar members as well as entrenched attitudes in some departments toward the grant and its goals. . . .

"Our future plans include further integrating science and math into the Women's Studies concentration and building further alliances with female faculty in the School of Engineering who have begun their own initiatives to establish summer institutes that will introduce girls and young women to the field of engineering."

—Rowan University Team

Student Experiences

As part of the Women and Scientific Literacy Project at Bates College, team members ran four focus groups about student experiences in introductory science courses. Questions focused on climate and curricular issues and were designed to provide a baseline against which to judge the success of the project in terms of curricular and climate change in science courses.

In general, students perceived Bates's science departments as doing a good job communicating information about women scientists; several groups mentioned that they learned about men who took credit for women's scientific achievements. Students also thought that, for the most part, gender-neutral language was used in texts and by their science professors. These findings, according to the Bates team, suggest that women have been added to science curricula at Bates, with inclusive language more the norm than not. However, they caution that students may not notice gendered language in their texts or classrooms.

One area of concern brought up by the focus groups related to class size. Although both male and female groups had concerns about grading and feedback, women were more likely than men to mention being intimidated in large classes. To the women, science classes at Bates were "too large," making a sense of community difficult to achieve.

Focus group feedback also suggested that women students were more interested than men in having courses demonstrate the applications of science and mathematics in their lives or in the world around them. When questioned about connections between labs and class content or current events, more women than men failed to see connections, especially between labs and class content. As a result the Bates team suggests that stronger lab/classroom connections may help some students understand concepts with which they are having difficulty. Greater perceived relevance of science and mathematics may lead to greater interest and participation.

The information for this article was supplied by Georgia Nigro, Whitehouse Professor and chair of psychology at Bates.

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for your bookshelf

Selected Readings on Women, Gender, and Science

The following bibliography was compiled from readings used by schools that participated in the Women and Scientific Literacy project. Several other bibliographies are available on the Internet including an annotated listing developed specifically for the Women and Scientific Literacy project on AAC&U's web site www.aacu-edu.org (click on Women and Scientific Literacy).

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and Scientific Literacy project," she says. "Until every campus across the country creates linkages between science and feminist thought, we haven't achieved our goal."

More and more campuses are striving to cultivate just those connections. We have made great strides in increasing the numbers of women in science. Now we are beginning to learn about the next generation of work: the tough, tedious, and exhilarating work of integrating feminist science studies across multiple disciplines. By combining our multiple perspectives, we can build a stronger science that engages students and promotes scientific literacy. ❑

Continued from page 9

gram is meeting their needs. Focus groups are used periodically to discuss the program's mission and suggest new initiatives. In 1997 the program expanded its mission to include additional services and resources for tenured women. Those hired with tenure can now work with a mentor during their first year on campus.

Active mentoring, complimented by other strategies such as targeted hiring initiatives, has benefitted all faculty and women in particular. Approximately one-third of women faculty at UW-Madison are matched in the Women Faculty Mentoring Program. At UW-Madison, the percentage of women in the faculty has increased from 16% to nearly 22% over the past nine years.

Resource material on the WISE Initiative is available at the CIC web site www.cic.uiuc.edu/wise/wiseintr.html. ❑

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Supported in part by grants from the National Science Foundation

web sites

4000 Years of Women in Science
www.astr.ua.edu/4000WS/4000WS.html
A good resource with many links related to women in science and engineering including the following:

Contributions of 20th Century Women to Physics
www.physics.ucla.edu/~cwp

Women of NASA
An interactive site with web chats, profiles, tips on how to integrate information on the site into the curriculum, and useful online resources
quest.arc.nasa.gov/women/intro.html

Women and Minorities in Science and Engineering
Good general resource; also includes link to the National Organization of Gay and Lesbian Scientists and Technical Professionals; African Americans in the Sciences which provides profiles of African Americans who have made contributions to the sciences as well as links to women in science and engineering organizations
www.ai.mit.edu/people/ellens/Gender/wom_and_min.html

Archives of Women in Science and Engineering
Great source of historical photos and other facts related to women in science and engineering
www.lib.iastate.edu/spcl/wise/wise.html

Bibliography on Women and Science
Comprehensive listing of books on women in science
www.inform.umd.edu/EdRes/Topic/WomensStudies/Bibliographies/ScienceBiblio

Association for Women in Science (AWIS)
www.awis.org

Celebration of Women in Engineering
A project sponsored by the National Academy of Engineering
www.nae.edu/cwe

Women and Scientific Literacy Project Sites

Portland State University
www.horizons.pdx.edu/~fem-sci-lit/

Rowan University
www.rowan.edu/mars/depts/biology/faculty/tahamont/RschSem.htm

University of Arizona
w3.arizona.edu/~ws/newweb/wsl/project.html

Barnard College
www.barnard.edu/wmstud/projects/projects.htm
At press time project site was under construction

St. Lawrence University
it.stlawu.edu/~hypatia

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resource update

Learning From the Past to Build the Future, the National Association for Women in Education's (NAWE) 84th annual conference, Feb. 23-26, 2000, will be held at the Swissotel, Boston, Mass. The conference's three academies—day-long, certificate-granting opportunities— focus on negotiating institutional change, leadership, and scanning internal and external environments. Visit NAWE at www.nawe.org for details.

Women Leaders 2000: A Symposium for Women in University Settings, March 9-10, 2000 will be held at the Cathedral Hill Hotel in San Francisco and is sponsored by the Center for Gender Equity at the University of California, San Francisco. Keynote speakers are Chin-Ning Chu, author of *Do Less, Achieve More*, Julianne Malveaux, syndicated columnist and economist, and Pat Heim, author of *Hard Ball for Women*. The conference also features a keynote panel on leadership with UCSC Chancellor M.R.C. Greenwood, UCLA Vice Chancellor Claudia Kernan-Mitchell, and UCSB Vice Chancellor France Cordova. Visit www.ucsf.edu/cge or call 415/476-5222.

The Female Principle, A Conference on the Suppressions and Reassertions of The Female Principle in Human Cultures, March 30-April 1, 2000, at the University of Texas, Arlington. Keynote speakers are Martha Nussbaum, March 30; Drucilla Cornell, March 31; and Eva Keuls and Nancy Tuana, April 1. This conference recognizes the suppression of femaleness as a primary meaning of Western and other cultures over a long period, and opens this issue to renewed scrutiny. It seeks to identify, document, account for, and interpret the suppression of femaleness via the specific forms it takes from early periods to the present, and to identify and describe newly developing practices that counter it. Contact lfrank@uta.edu or call 817/272-2692.

2000 Subversions: Women's Studies and the Twenty-first Century, the National Women's Studies Association's 21st annual conference, will be held June 14-18, 2000, at Simmons College, Boston, Mass. Plenary topics include "Agendas for feminist education," "Transformations: Feminist/Womanist/Gender/Queer/...Where Do We Go From Here?" and "Feminist Action and Intellect: Subverting the Gendered Politics of War and Peace." Two special programs are also featured—an institute on lesbian studies and a professional development/continuing education seminar series. Visit NWSA at www.nwsa.org for details.

Resources

Internships in Feminism and Public Policy are available from the Feminist Majority Foundation. Each internship includes a variety of responsibilities such as monitoring press conferences and congressional hearings, researching, writing, policy analysis, and organizing events and demonstrations. Both men and women are encouraged to apply. Full-time internships, which run a minimum of two months, are available year round. For those serving from September through May, a small stipend is available. Contact Justine Andronici, 1600 Wilson Blvd., Suite 801, Arlington, VA 22209; 703/522-2214; fax: 703/522-2219.

The Career Development Grants program sponsored by The American Association of University Women Educational Foundation supports women currently holding a bachelor's degree who are preparing to advance their careers, change careers, or re-enter the workforce. Applicants must be US citizens or permanent residents whose last degree was received before June 30, 1995. Special consideration is given to AAUW members, women of color, and women pursuing their first advanced degree or credentials in a nontraditional field. Grants range from $2,000-$8,000. Application postmark deadline is **Dec 15, 1999.** Contact AAUW at 319/337-1716 or visit www.aauw.org

Residential posdoctoral fellowships are offered by the University of Memphis, Center for Research on Women (CROW). Financed by the Rockefeller Foundation, the fellowships are meant for scholars studying race and gender in the mid-South. Scholars may apply for up to $30,000 in financial support for one academic year (September-May). Funds are also available for travel and health insurance. Fellows are expected to be in residence at CROW, where they receive office space and clerical support. The application deadline for fall, 2000 fellowships is **January 17, 2000.** Contact: Center for Research on Women, Campus Box 526105, The University of Memphis, Memphis, TN 38152-6105, or crow@memphis.edu

Committee on Institutional Cooperation Summer Research Opportunities Program offers talented undergraduate minority students a chance to enhance their preparation for graduate study through intensive research experiences with faculty mentors. The eight- to ten-week summer session provides students a stipend of at least $2,500, plus up to $1,100 toward room and board and travel to and from the host institution. The faculty mentor may receive $500 to cover the cost of the student's research project. The host institutions provide funding for students to attend the annual SROP (Summer Research Opportunities Program) conference. Application deadline is **January 28, 2000.** Contact Anne Price at aeprice@uiuc.edu or visit www.cic.uiuc.edu/

The Five College Women's Studies Research Center, a joint project of Amherst, Hampshire, Mount Holyoke, and Smith Colleges and the University of Massachusetts/Amherst invites applications for its Research Associate positions for 2000-2001 from scholars and teachers at all levels of the educational system, as well as from artists, community organizers and political activists, both local and international. Associates receive office space, access to computer facilities, library privileges at the five institutions, and the collegiality of a diverse community of feminists. Appointments are made by semester and annually. The deadline is **February 11, 2000.** Contact the Center at Dickinson House, Mount Holyoke College, fcwsrc@ wscenter.hampshire.edu or visit wscenter.hampshire.edu

Directory of Financial Aid for Women 1999-2001, by Gail Ann Schlachter provides a compre-

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Women's Networking Breakfast
January 20, 2000
Keynote Speaker: Judith Glazer Raymo
Author of *Shattering the Myths: Women in Academe*
Grand Hyatt Hotel • Washington, DC
Part of the AAC&U Annual Meeting • January 20 - 22, 2000
For details visit www.aacu-edu.org

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hensive listing of scholarships, fellowships, loans, grants, awards, and internships designed primarily or exclusively for women. In addition it offers an annotated bibliography of general financial aid directories and six indices ranging from program titles to submission dates. The directory is available from Reference Service Press, 5000 Windplay Drive, Suite 4, El Dorado Hills, CA 95762; 916/939-9620 voice; www.rspfunding.com ❑

Photos used in this issue of OCWW *include photos from Iowa State University Library (www.libiastate.edu/spcl/wise/wise.html), the University of California, Los Angeles (www.physics.ucla.edu), and Photodisc. Page 1: from top to bottom, Shirley Sparling, Unknown, Sau Lau Wu, Chien Shiung Wu, Shirley Ann Jackson, Unknown, Jocelyn Bell Burnell, Louise Dolan, Sophia Kovalevskaya. Page 7: Martha Whitaker. Photos on pages 2, 3, 4, 6, and 11 are from Photodisc.*

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AAC&U is the leading national association devoted to advancing and strengthening liberal learning for all students, regardless of academic specialization or intended career. AAC&U is committed to making the aims of liberal learning a vigorous and constant influence on institutional purpose and educational practice in higher education.

On Campus With Women is the quarterly newsletter of AAC&U's Program on the Status and Education of Women (PSEW). With a quarter century of national leadership, PSEW is one of only two women's offices sponsored by a higher education association. PSEW's current priorities are curriculum and campus climate, promoting women's leadership, and disseminating new research on women and gender.

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Director PSEW Caryn McTighe Musil

Executive Editor Debra Humphreys

Editor Susan Reiss

Vice President for Communications Joann Stevens

Production Editor Ann Kammerer

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on campus women

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Progress in Fits and Starts

Fits and starts characterize the progress of women in higher education during the 20th century. In 1903, for example, the University of Chicago segregated women from its previously co-educational undergraduate program. Yet, between 1900 and 1930 the proportion of women receiving a bachelor's or first professional degree increased from 19% to 40%. The numbers continued to accelerate until the 1950s when a dip occurred. Two decades passed before strong growth returned and more women than men entered college.

During World War II, women accepted the challenge of factory work, only to relinquish, often unwillingly, their positions when the war ended and veterans were given preference. Domestic life soon became the focus of the American psyche. In the 1960s, the Civil Rights movement rekindled new waves of activism. Women began reading *The Feminine Mystique*, the National Organization for Women (NOW) was established, and numerous legal gains such as the Equal Pay Act and the Equal Employment Opportunity Commission established formal policies to remedy pay and gender discrimination.

By the 1980s, 46 million women worked in the U.S., but half held jobs in only 20 of 441 possible professions; 80% were in jobs traditionally held by women. Women accounted for 25% of scientists, yet they were less likely than men to be full professors or on a tenure track in teaching. During the last decade of the century, women were paid 71 cents for every dollar paid to men. The Family Medical Leave Act enacted in 1993 enables women to take unpaid leave from their jobs when they have a baby and not lose their jobs.

Clockwise from upper left: Wilma Mankiller, Madeleine Albright, Jeanette Rankin, Mary MacLeod Bethune.

This issue of *On Campus With Women* provides a look back at the accomplishments of the 20th century that have made it possible for women to become astronauts, doctors, economists, and academics. We also suggest areas where much work still must be done—minority women's advancement, graduate education, and leadership.

Consider this comparison. In 1900 women's average life expectancy was 48.3 years. We married at 22, and bore about 4 children. We had no separate legal identity from our husbands and had little right to control our own reproduction. Few could vote, serve on juries, or hold public office. According to the U.S. Supreme Court, women were not classified as "persons" under the 14th Amendment. We were discouraged from pursuing college degrees, and were openly excluded from professional schools.

Nearly 100 years later, women live an average of 79.7 years, marry at 24, and bear about 2 children. We have full legal standing, apart from our husbands. We have more choice regarding our bodies and are more fully represented in higher education:

- 25% of women between 25 and 34 are college graduates, and
- Women account for 43% of law students, 38% of medical students, 36% of MBA students, 38% of dentistry students, and 39% of doctoral students.[1]

When histories are compiled of the 21st century, what milestones will mark higher education for women? We continue to make gains in administrative and faculty positions, but we continue to suffer wage disparities, are promoted at a slower rate than our male peers, and work in disproportionate numbers in under-resourced institutions. We hold high-level positions, yet in many cases our power remains limited. Women are the majority of students and yet this fact seems to raise eyebrows. Last year, for example, major media outlets asked the question, "If this is where the girls are, where are the boys?" The ascent of girls and women still raises questions and concerns.

Women's social, economic, and legal prosperity does not come easily and is not granted evenly to all women. Sexual harassment remains a problem for women students, staff, and faculty; pay equity for women faculty and administrators is yet to be fully achieved. The classroom climate, especially in the sciences, still requires vigilant monitoring. Legal setbacks in affirmative action threaten gains, especially by women and men of color. Still, progress has been made in stunning ways.

The 21st century is, as perhaps no century before has yet been, largely in our hands, as women, to shape. If the

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institutional leadership

Forever Torn—Latina and Gender Issues

By Robert A. Ibarra
Assistant Vice Chancellor
University of Wisconsin—Madison

The following article includes research by Robert Ibarra for his forthcoming book Beyond Affirmative Action: Reframing the Context of Higher Education (University of Wisconsin Press, Fall 2000) *which evaluates how well higher education addresses the needs of Latinas and Latinos and offers a design for creating a more inclusive environment for everyone.*

As we move into the 21st century, a demographic shift is altering the face of diversity in higher education. Latinos are among the fastest growing populations whose numbers could reach more than 44 million by 2015 and thereby become the largest group of ethnic minorities in the United States, according to U.S. Census Bureau projections. As they move into higher education in increasing numbers, however, gender differences become apparent. Latinas encounter many distinct challenges as students, faculty, and administrators (Ibarra 1996).

Balancing Multiple Roles

Like other minority women, Latinas bring to academe a history of balancing roles—those of gender, ethnicity, and occupation. This ability to balance multiple social and occupational roles can ironically also subject Latinas and other minorities to additional burdens that can delay academic success.

Gloria Anzaldúa asserts that blended multiple layers are the cultural essence of the new Mestiza among Chicanas today—a tricultural identity that blends Indian/Mexican, Mexican, and Mexican/American ancestral cultures. Thus, in learning to juggle these cultural influences Chicanas and other Latinas have developed multiple adaptive strategies. The dynamics can also create cultural collisions. Latinas in my study, for instance, often clash with academic cultures. They also, however, frequently develop great tolerance for contradictions, ambivalence, and ambiguity that sustain them. Clinical psychologists Manuel Ramírez and Alfredo Castañeda suggest that individuals with multicultural identities possess flexibility and other skills seen in cultural facilitators that help them as leaders in mixed ethnic groups.

Latinas belong to what anthropologist Edward Hall identifies as high context cultures. They tend to focus on streams of information that surround an event, situation, or interaction to determine meaning from the context in which it occurs. Low context cultures, predominantly northern European ethnic groups and majority males in the U.S., tend to filter out conditions surrounding an event, situation, or interaction and focus as much as possible on words and objective facts. Communication is the reverse of that in high context cultures and has been described as "computer-like" (Hall and Hall, 1990). Academic cultures in higher education tend to be low context and the different value systems associated with high and low context cultures are often at odds with each other. How, then, do gender, cultural context, and cognition affect Latinas in academia?

Latinas in graduate education may find problems are triggered from a variety of possible sources—relative isolation, lack of faculty support for women students, and the lack of collegiality with other graduate students. The problems in graduate school can be compounded further for Latinas and other women in the sciences.

The most difficult and most painful experience I have ever encountered in minority affairs has been watching bright, successful Latina women, in both engineering and science graduate programs, simply walk out the door. These Latinas had completed their Master's degrees in their chosen fields, or received honors, or were active in their disciplinary associations, and they were quite capable of completing their doctorates.

Latinas explained to me that they decided to simply discontinue the battle against a male-dominated academic culture that took no interest in mentoring or encouraging them. One Latina decided to try her skills in various research labs, something she specifically intended to do with her degree in the first place. The other found an excellent position with a well-known corporation and also appears to be thriving. While these individual women are successful in new careers, their decision to leave academia is a real loss for the faculty, graduate programs, and other researchers in their former fields of study. What a loss of trained talent, cultural energy, and potential innovation.

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Points of Conflict for Latinas

Of 77 Latinos and Latinas interviewed in my study throughout the U.S. between 1995-96, approximately 73% identified challenges related to gender issues. Key concerns included intra-cultural issues and hostile Latino males; sexism and discrimination; the problems of balancing their roles as mother, wife, and academic; dealing with sexist stereotypes; and the discomfort generated by being the only Latina or female professor in the department.

Thirty-two females accounted for almost 42% of the responses, with the most troublesome events described by faculty and administrators. Seven Latinas specifically discussed faculty conditions and experiences, but only one of them commented positively on the topic. She considered herself to be a "fighter," and she attributed her self-confidence to modeling her behavior and attitudes after her mother and family. Disturbingly, the vast majority of all the comments were negative and centered around personal issues, academic experiences, or a combination of both.

By contrast, within the 1995-96 study group, only seven males commented on gender issues as they related to faculty conditions and experiences, and only one of them claimed to be unaware of gender issues or problems on campus. The remaining six described the problems that Latinas encountered as centered around four academic issues: (1) Women are not taken seriously in academia; (2) They lacked support, were disconnected from department or institution, and/or their work was not valued; (3) Latinos noted salary discrimination against Latinas; and (4) Latinas carried heavy departmental or institutional service loads, or minority burdens associated with being a Latina, a woman, and/or being a faculty member in the sciences.

> While these individual women are successful in new careers, their decision to leave academia is a real loss for the faculty, graduate programs, and other researchers in their former fields of study. What a loss of trained talent, cultural energy, and potential innovation.

An uncommonly heavy burden felt by many Latinas is the cultural pull to have a family. Cultural expectations conflict with the demands of a profession, and those in turn conflict with the demands of raising a family. Although these problems are not uncommon among all career-oriented women, for some Latinas in the study, their decisions extracted an extra toll. Choosing to pursue an academic career even when it is balanced with having a family risks disengaging Latinas from their traditional community roles. And sometimes the price paid is worse. They may lose community support that has been a source of sustenance for them in their professional and personal lives.

Toward a Solution

Gender, culture, context, and cognition together affect the values brought into the classroom and those passed on to students. What often distinguishes the Latinas' response from the European American males who guide academe and what sets Latinas apart from all other nonminority women is their ability to immerse themselves in a familiar high context culture. In the classroom, this enables Latinas to draw on their rich cultural experiences and impart to students a deeper awareness of the importance of self and community.

"But I'm forever torn" stated one participant in my 1996 study. It represented the intensity that she and other Latinas feel in their quest to balance the roles of culture, gender, and profession. Their experience doesn't make them more different; they just feel more intensity and pain in the conflicts they continue to endure, conflicts made by decisions that they know will tear them from the taproot of Latino culture—the family in their community. How would it affect Latinas and Latinos, in graduate education and beyond, for instance, if our institutions were suddenly stripped of many academic cultural impediments such as a hostile campus, individualization, impersonal pedagogy and were then transformed by a genuinely interactive, cooperative, experiential, and learner-focused institution? And could that mend the tears in the changing fabric of diversity in higher education as well? The health of higher education and the future of our society depend on how we answer those questions. Until we can expand the expression of what is valued in academic culture so it is more aligned with its faculty, the disconnect, dissonance, and difficulties will continue to disproportionately affect groups like Latinas.

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women students today

Women Graduate Students: A Century of Progress?

Between 1965 and 1995, the number of women earning doctorates has increased 800%, from 1,760 to 16,333. Women's representation among all Ph.D. recipients rose from 11% to 39% during the same period. Even with these increases, women graduate students face many of the same challenges in 2000 as they did a century ago according to University of California, Berkeley researchers Maresi Nerad and Joseph Cerny.

In a recent article, "Widening the Circle: Another Look at Women Graduate Students" (*Communicator*, Council of Graduate Schools, August 1999), Nerad, director of graduate research, and Cerny, dean of the Graduate Division, argue that while progress has been made in the number of women attaining Ph.D. degrees, conditions for women in graduate school are surprisingly similar today to conditions in 1900.

We encourage, for example, women to go into science but we are not making accommodations for them later on. All universities are grappling with these issues as best they can, but higher education hasn't thought this through.

"Widening the Circle" is one of a series of recent publications that provide data on Ph.D. outcomes[1] and provide recommendations for improving doctoral training, both academic and professional. When Cerny became Berkeley's graduate dean in 1985, he began examining the "entire spectrum"—from international students to minorities and women—to determine how best to improve the time to degree for doctoral students at Berkeley. One area he found particularly troubling was the lack of support available to women entering the sciences. As chair of the chemistry department, Cerny had witnessed large growth in the numbers of women entering his department but had few institutional programs to support them as they worked toward their doctorates.

"We encourage, for example, women to go into science but we are not making accommodations for them later on," he says. "All universities are grappling with these issues as best they can, but higher education hasn't thought this through."

Lessons from the Past

In "Widening the Circle" Nerad and Cerny draw on the work of Albion W. Small, chair of the first sociology department in the U.S. at the University of Chicago, to illustrate the similarities between women graduate students in 1900 and 2000. Small conducted two surveys prior to a meeting of the Association of American Universities (AAU) in 1905. One survey polled the 15 member institutions of AAU and asked them to discuss their actual experience teaching, educating, and training women for research and advanced professional work. The second survey elicited responses from women faculty at leading women's colleges who held doctoral degrees regarding their experiences as doctoral students.

Small presented his results at the AAU meeting. Feedback from the institutional survey suggested women were "accepted" in coeducational settings at the graduate level, say Nerad and Cerny. "Women were not 'misusing their freedom' and they did not 'curtail the freedom of men.'" When Small sent the survey to leading women's colleges, the presidents of these institutions argued that "the most favorable conditions for women's undergraduate education were to be found in women's colleges, but that graduate work was best done in coeducational settings."

Small's survey of faculty women painted a different picture. According to survey respondents, "Graduate women were at a disadvantage because they had little intellectual contact with their instructors and the contact they had was restricted to the lecture room. Men met often with their instructors and in a more informal way that permitted a freer discussion of their work. . . . Because women were merely admitted to graduate school and not actively recruited as men were, they felt a double obligation to justify their presence by their achievements." The women surveyed also suggested that because it would be a financial waste to duplicate libraries and laboratories to educate graduate women separately, research universities should offer graduate women equal rights and equal treatment so they could obtain the best instruction in advanced studies along with their male counterparts.

Small concluded, "There was no need to worry about the presence of women in graduate school because as long as research is the program of graduate schools, women would not predominate." Small went on to explain that "relatively fewer women than men have the means and the taste and the fitness and the nerve combined to succeed in research."

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Stanley Hall, president of Clark University, followed Small's presentation at the AAU meeting. Hall's greatest concern in higher education for white women was the threat of what he referred to as race suicide: "He observed that few college educated white women married, and if they did, then few had children." The popular psychology professor closed his presentation with this admonition, "Our higher education would soon depopulate the country if it became universal."

Nerad and Cerny contend that "we still have a long way to go to achieve equal participation of women in all aspects of graduate education. Many of the women's responses to Professor Small's survey can still be heard echoing through the halls of modern campuses."

Improving Intellectual Parity

Some of the institutional factors that impede graduate women's success today are the same factors affecting success a century ago: a lack of a critical mass (defined as 15% of the total population) of women in some fields, insufficient role models, little access to male networks, and inadequate child care facilities.

To aid women graduate students in the 21st century, Nerad and Cerny recommend institutions focus on eight key areas:

- **Graduate school admission and orientation**—Graduate schools can monitor admissions to determine if an equal percentage of qualified men and women are admitted. In their welcoming remarks at orientations, department chairs should encourage all students to work toward the doctoral degree goal and indicate that some will finish in 4 years while others may need a realistic period of time in which to complete the degree. This counters language that can sometimes be interpreted negatively by women, such as "You are brilliant people. You should be planning to graduate in 3 or 4 years at most."
- **Learning environment**—Graduate schools should take the lead in warming chilly classroom climates and in urging departments to create advising and guidance programs that reduce the chilly climate. Benign neglect fails both male and female students.
- **Rules and procedures**—Graduate schools should make them transparent for all students and establish systems of regular feedback.
- **Isolation and integration**—Graduate schools need to counter isolation with ample opportunities for formal and informal contact and conversation. Peer support systems can help integrate women immediately into the department and its culture. Affirmative action hiring efforts should continue and incentives for departments that hire more women faculty should be established.
- **Sexual harassment**—Universities should offer workshops that specifically identify sexually harassing behavior to lessen confusion over what constitutes sexual harassment. These can ease the relationship between faculty and students and improve departmental climate.
- **Graduate student services**—Universities should supply ample and easily available campus childcare facilities, which may help reduce time-to-degree for all graduate student parents, particularly graduate women students with children.
- **Relationship with the dissertation supervisor**—Advisers should provide consistent feedback and positive encouragement to advisees.
- **Job search**—Advisers should discuss students' career prospects. Faculty supervisors and graduate advisers should help students develop a career path and, in the case of married student couples, help devise strategies for finding two professional positions in the same location.

Beyond 2000

"We have widened the circle, increasing the number of doctorates awarded to women in all fields, but we still have a long way to go to enlarge expectations, further reject stereotypes, and overcome the culturally ingrained practices that inadvertently exclude women from full participation and success in graduate school and professional careers," say Nerad and Cerny. "Top university administrators can play a central role in leading their institutions toward support of women graduate students at various stages of the doctoral program, so true parity of intellectual opportunity will be realized."

Notes

1. See also Nerad, Maresi and Joseph Cerny, 1999. "Postdoctoral Patterns, Career Advancement, and Problems." *Science*, 285:1533; Nerad and Cerny, 1999. "From Rumors to Facts: Career Outcomes of English Ph.D.'s: Results from the Ph.D.'s-Ten Years Later Study." *Communicator*, 32:6.

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women's leadership

At the Top: Breaking the Stereotype

The tone at the top of any organization—whether academic or corporate—is a major factor in women's ability to obtain and succeed in upper-level positions according to a new study published jointly by the Radcliffe Public Policy Center and The Boston Club. The study, "Suiting Themselves: Women's Leadership Styles in Today's Workplace," also found that fewer and fewer women feel they must conform to a stereotypical male or female leadership style.

"Women see themselves as individuals," says Francoise Carré, director of research at the Radcliffe Public Policy Center. "But the context matters." While the women interviewed for the study said that they had been in the right place at the right time, they qualified those statements by saying they had to be strategic in getting themselves to the right place at the right time. As one participant noted: "You can have all the opportunities in the world, but if you don't have the judgment to pick where you move and when, seeing that's an opportunity, then you're not really that sharp. I think an aware person and a potential leader knows when the variables are correct for movement."

Funded by Fidelity Investments, the project was based on a survey mailed to over 700 women in the Boston area—Radcliffe alumnae and members of The Boston Club, a group of over 400 senior executive and professional women—and on follow-up focus groups. The 453 who participated in the study are leaders in corporate, academic, and non-profit endeavors, and self-employed women.

Qualities most frequently cited as critical to a leader's effectiveness

- Vision
- Ability to influence others
- Strategic thinking
- Communication skills
- Ability to make difficult decisions
- Self-confidence
- Hiring a strong staff

—Charts from "Suiting Themselves," Radcliffe Public Policy Center and The Boston Club, Cambridge, Mass. 1999.

Survey Results

Sixty-six percent of the respondents said they feel comfortable with power, risk-taking, and making personal sacrifices necessary to get ahead. "You have to keep in mind that those interviewed are the ones who've made it," says Carré. "This is a picture of what happens when it works well."

In addition to working in an environment that clearly embraces women in leadership roles, the following factors contribute to a woman's rise to the top: access to information both through informal and formal channels, access to key assignments, and basic workplace policies that bar sexual harassment and discrimination, while fostering equal pay.

Although the picture is bright for majority women, 41% of women of color reported that they had to work harder and longer than their male counterparts to reach leadership positions compared to 6% of white women. Fifty-seven percent of women of color also viewed racial stereotyping as a barrier to advancement compared to 36% of the overall sample that viewed stereotypes about women as a hindrance to their leadership. "Minority respondents were more likely to think of professional organizations and formal policies as important to their advancement," says Carré. "This is a subtle but key point," says Tiffany Manuel, a Radcliffe Public Policy Center research associate and one of the report's authors. "Minority women are not getting what they need in the workplace so they look to other organizations to develop leadership skills."

Age vulnerability also emerged as an issue in the study. "For women in situations where gender doesn't matter, age does," says Manuel. "Corporate environments haven't responded yet. This is not just an issue for women. Cultural changes are needed in which people acknowledge that workers can be fully productive members of the team at age 45." According to one respondent, "My belief is that advancement is more difficult now—based on age—not the status, of women."

Job prospects, according to 85% of respondents, are better now than they were 15 years ago. But 42% felt that they currently enjoy much better prospects than women will face 15 years from now. "It was unclear from the research if this is a critique of the women coming behind or if these women felt they could move faster than the women behind them will [be able to]," says Manuel. "Career paths are less predictable today. The younger generation is in another double bind with work and family. There is less flexibility and you have to ask yourself, 'How will I make it all work?'" adds Carré.

Traits cited most frequently to define "leadership style"

- Collaborative
- Flexible
- Inclusive
- Participatory
- Supportive
- Assertive
- Decisive
- Team-oriented
- Strong
- Committed to racial/ethnic diversity
- Informal

Advice on Getting Ahead

Rather than offering a set of clear-cut recommendations, the Radcliffe/Boston Club survey offers advice from senior respondents on how to get to the top. Here is a sampling of their suggestions:

- Follow your own curiosity and passion, then be strategic. Keep your values, including moral and family, clear and central.
- Feel free to create and pursue alternate routes to career success and satisfaction. Don't just accept traditional ones.
- Do not listen to those who say you cannot have it all. Get as much education as possible as early as possible. Change jobs frequently and take difficult and foreign assignments early in your career. Do not sacrifice family and relationships for work, ever. You don't have to.

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campus as workplace

Michigan Women of Color Task Force Gives Visibility to Staff Issues

Empowering. Satisfying. Enriching. These words define the experiences of women associated with the University of Michigan's Women of Color Task Force (WCTF). Founded in 1979, the WCTF provides a forum for personal and professional growth for women of color as well as a vehicle to focus attention on concerns and contributions of university employees, in general.

The WCTF is composed of a general membership, an executive team, and other teams including Resource/Recognition, Career Conference, Membership/Social, and Outreach/Program Development. Through this structure, WCTF not only gives visibility to contributions made by staff, they also act as a networking tool enabling women to meet and share information.

Cathy Conway-Perrin, a WCTF member who has also served on the Executive Team, suggests that because institutions such as Michigan are "still primarily white institutions, those in positions to make changes are not likely to know our [staff] experiences unless we describe them." She argues that many universities ensure that student needs are analyzed and met, and also provide support to meet the needs of faculty. "Staff are often last on the list," says Conway-Perrin. "Unless we speak up and make ourselves visible, our needs are not even known, let alone met. If those in power are aware of our contributions as well, they tend to be more interested in helping to solve our problems."

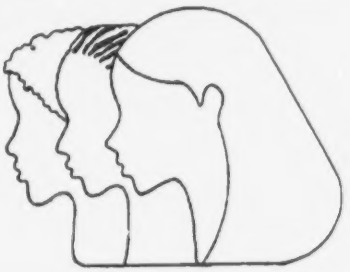
Developing reciprocal relationships with sponsors of the task force is one of the reasons for the WCTF's success according to Conway-Perrin. "The sponsors realize you contribute to the university and, in some ways, help them do their jobs. We are fortunate to have several high-level administrators on campus who believe in our work and are willing to support it—financially and otherwise," says Conway-Perrin. "Without them we would not be able to accomplish all that we do."

One of the main activities sponsored by the WCTF is its annual Career Conference. The one-day event features workshops on topics related to career, health, and life beyond work such as resume writing and job search skills, time management, financial planning, parenting strategies, and communication skills. "Each year between 700 and 1000 people, mostly university staff, attend our conference," says Conway-Perrin. "Participants learn things that not only help them do their jobs better, but also enhance their personal lives. A staff member who is physically, emotionally, and financially healthy misses less work, has fewer distractions and worries, and performs at a higher level." Participants also say the camaraderie during the conference gives them a boost since their day-to-day jobs do not always allow time to get together and share experiences and collective wisdom. Another activity that boosts morale, according to Conway-Perrin, is the WCTF's annual awards ceremony. Three nomination categories focus on leadership, human relations, and distinguished service.

At Michigan, WCTF also serves as a clearinghouse and liaison to other organizations on campus. "The task force can provide names of women of color who can serve on various university committees and/or task forces," explains Wendy A. Woods, a member of the WCTF, whose work with the task force led to her appointment on the President's Advisory Commission on Women's Issues. "We help take away the excuse that 'there were no people (women) of color available to serve' or 'we just couldn't find people of color interested in volunteering,'" says Woods.

If you'd like to find out more, contact WCTF at 734/763-0235; wctfexec@umich.edu; www.umich.edu/~wctf

Joining Forces



To start an organization similar to the WCTF on your campus, one of the keys is to find others who share your concerns and your ideas about solutions. "I think one of the things that keeps the task force going is our shared passion about what we do here and how we can make things better," says Cathy Conway-Perrin.

Since each campus is different, the organization will need to adapt to specific historical and cultural characteristics. At the University of Michigan, an activist legacy and agenda pulses through the campus. "I think this [an activist agenda] is true for staff as well as faculty and students," says Wendy Woods, adding that the university's motto—The Leaders and the Best—applies to women of color as well.

Woods says an African-American verse best sums up her advice to others considering an organization like the WCTF:

- Plan purposefully
- Prepare prayerfully
- Proceed positively
- Pursue persistently.

In addition, Woods points out that it is important to know why you want to meet because "no one likes a meeting without a purpose, no matter where you are." Once you've settled on the group's purpose, look for sponsors who will work with the group toward common goals.

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We've Come A Long Way...

The Century for Women in Higher Education

1902

• Simmons College in Boston opens as the first technical college for women.

1903

• Antoine-Henri Becquerel and Pierre and Marie Curie share the Nobel Prize. Curie is the first woman to win a Nobel prize.

• University of Chicago segregates women from its previously coeducational undergraduate program.

1908

• The American Academy of Arts and Letters admits its first female member: poet Julia Ward Howe.

• The Muller v. Oregon case upholds the right of a U.S. state to regulate the maximum hours of work for women on health grounds.

• The Sullivan Ordinance in New York City prohibits women from smoking in public places.

• Ella Flagg Young becomes first woman superintendent of a major U.S. school system.

1910

• The number of women attending college has increased 150% since 1900.

• Elizabeth Arden opens her first beauty shop, in New York, New York.

• U.S. Congress passes the Mann Act which bans the interstate transportation or national importation of women destined for prostitution.

1911

• Jovita and Soledad Pena organize La Liga Femenil Mexicanista (League of Mexican Feminists) in Laredo, Texas. Its motto: "Educate a woman and you educate a family."

• In April an all-time record 11,745 immigrants pass through Ellis Island in New York.

1912

Jacksonville to form the Bethune-Cookman College in Daytona, Florida.

• Alice Paul presents a draft of an Equal Rights Amendment to delegates of the National Woman's Party at its annual convention in Seneca Falls, New York.

1924

• The National Association of College Women is formed.

• The National Origins Act sets the annual immigration quota at 2% of the U.S. population from any given country, thereby reducing immigration from Europe and increasing the number of Asian immigrants accepted to the U.S.

1925

• Bennington College for Women opens in Bennington, Vermont.

• U.S. anatomist Florence Sabin becomes the first woman member of the American Academy of Sciences.

• The United Status's foremost medical societies endorse birth control.

common cause of death among U.S. women.

1945

• The Julius Rosenwald Fund offers to pay the salaries of black faculty if universities will hire them.

• The Equal Pay for Equal Work bill is again introduced into Congress. It passes in 1963.

• Harvard Medical School accepts its first female student.

1946

• The Estée Lauder beauty products empire is launched with Estée Lauder's first sales to Saks in New York City.

1948

• Margaret Chase Smith is elected the first woman senator in the United States.

1949

• Simone de Beauvoir publishes *The Second Sex*.

• Harvard Law School announces that it will enroll women.

1954

• An oral contraceptive using the hormone norethisterone is developed.

Employment Opportunity Commission (EEOC), which receives 50,000 complaints of gender discrimination in its first five years.

1964

• Patsy Mink (D-HI) is the first Asian-American woman elected to the U.S. Congress.

1965

• In Griswold v Connecticut, the U.S. Supreme Court overturns one of the last state laws prohibiting the prescription or use of contraceptives by married couples.

• Lyndon Johnson's Executive Order 11246 requires federal agencies and federal contractors to take "affirmative action" in overcoming employment discrimination.

• Weeks v. Southern Bell marks a major triumph in the fight against restrictive labor laws and company regulations on the hours and conditions of women's work, opening many previously male-only jobs to women.

1966

• In response to EEOC inaction on employment discrimination complaints,

• The Boston Women's Health Collective publishes *Our Bodies, Our Selves: A Course by and for Women*.

• American Council on Education establishes The Office of Women in Higher Education and the Commission on Women in Higher Education to promote women's leadership and to develop a roster of women ready for top administrative positions.

• The U.S. Supreme Court rules that advertisements for employment cannot specify gender.

• Women account for 44.7% of the U.S. work force. Salaries differ as much as 20% between men and women performing the same job.

1974

• Democrat Ella Grasso becomes governor of the state of Connecticut, and the first woman governor of a U.S. state who is not the wife or widow of a former governor.

• The Women's Educational Equity Act, drafted by Arlene Horowitz and introduced by Rep. Patsy Mink (D-HI), funds the development of nonsexist teaching

• National Coalition Against Domestic Violence forms bringing shelters and other groups together to publicize the issue.

• For the first time in history, more women than men enter college.

1979

• Karen Stevenson, of the University of North Carolina, becomes the first African-American woman to be awarded a Rhodes scholarship.

1980

• Michaela Walsh founds Women's World Banking, which provides loans to women with no credit or collateral. By 1991 the organization helps over 500,000 women entrepreneurs worldwide.

• New EEOC guidelines list sexual harassment as a form of prohibited sexual discrimination.

1981

• National Council for Research on Women founded.

• Sandra Day O'Connor is appointed the first woman justice of the U.S. Supreme Court.

1982

• The 1972 Equal Rights Amendment in the United States, prohibiting discrimination on the basis of sex, fails to secure ratification of a sufficient number of states to ensure inclusion in the Constitution.

• *All the Women Are White, All the Blacks Are Men, But Some of Us Are Brave: Black Women's Studies* published.

1985

• The International Women's Development Agency is founded, and the United Nations holds a 12-day "Decade of Women" conference in Nairobi, Kenya.

• Wilma P. Mankiller becomes the first woman to be named chief of the Cherokee Nation.

1986

With the new millennium drawing our eyes to the future, the *OCWW* editors thought it was a good time to look back at how we got to where we are today. Our future, in large part, depends on our understanding what fires and sustains change. Many of the tremendous political, economic, technological, and social changes that have enabled women to expand their participation in public life during the 20th century have their roots in the 19th century.

The suffrage movement marks its origins at the Seneca Falls Women's Rights Convention in 1848. In 1868 the 14th amendment to the U.S. Constitution guaranteeing citizenship and equal rights to African Americans became

when a dip occurred because of the influx of men on campus due to the G.I. Bill.

Prewar growth returned in the 1970s as did increased access and opportunity for women. Congress passed Title IX, the Equal Employment Opportunity Act, and the Women's Educational Equity Act, setting in place formal policies to ensure greater equity.

Although women are the majority of students in higher education overall, in various fields of study and in some administrative positions much work still lies ahead in the 21st century. Disparities across racial lines, for example, continue to undermine progress for all women. Between

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law. The Seven Sisters were all founded by 1890. By 1900, American women had earned 229 doctorates; half awarded by Yale, Chicago, Cornell, and New York University. Sixty were in the sciences. Because employment was scarce, women's colleges provided the best option for well-trained women scientists.

As the new century dawned, the momentum begun in the 1800s propelled women and their male supporters to challenge their exclusion from male-dominated arenas. From 1900 to 1930 the proportion of women receiving a bachelor's or first professional degree increased from 19% to 40%. Numbers continued to increase until the 1950s, 1975 and 1997, the number of women college and university presidents grew from 148 to 480. Colleges and universities in the U.S. number about 3500.

As a result of changing demographics and the urgency to create inclusive learning environments in which everyone flourishes, it is in the academy's interest to turn to women. Women's talents, vision, and commitment to alter the very structure of society are captured in the abridged chronology that follows. Building on these accomplishments and the scores that could not be included, offer a firm foundation for limitless possibilities in the new millennium.

• Juliette Gordon Low founds first American group of Girl Guides, in Atlanta, Georgia. Later renamed the Girl Scouts of the U.S.A.

1913

• Alice Paul leads 5,000 suffragists down Pennsylvania Avenue in Washington, D.C., to protest for the right to vote.

1914

• Mary Phelps Jacob patents the modern elasticized backless bra in the United States. She sells rights to the U.S. corset company Warner, which begins production.

1916

• U.S. birth control advocates Margaret Sanger, Fania Mindell, and Ethel Burne open the nation's first birth control clinic in Brooklyn, New York. Police raid the clinic and jail Sanger for five days.

• Philanthropist Margaret Olivia Slocum Sage establishes Russell Sage College for Women in Troy, New York.

1917

• Jeanette Rankin is the first woman elected to Congress.

1920

• Female college undergraduates have doubled in number since 1910.

• The Women's Bureau of the Department of Labor is formed to advocate for and keep statistics on women in the workforce.

• The 19th Amendment to the U.S. Constitution, granting women's suffrage, becomes law.

• Carrie Chapman Catt creates the League of Women Voters, providing newly enfranchised women with reliable, unbiased electoral information.

1921

• The American Association of University Women is formed.

• The Kimberly & Clark Co. of Neenah, Wisconsin, begins to sell its Celucotton sanitary napkins under the new name Kotex.

• U.S. hemlines rise appreciably in what some cultural arbiters construe to be evidence of the American woman's newfound liberation.

1922

• Georgia governor Thomas W. Hardwick names Mrs. Rebecca Anne Felton to fill the senate vacancy created by the death of Thomas E. Watson, making Felton the first woman to serve in the U.S. Senate.

1923

• The Daytona Normal and Industrial Institute for Negro Girls merges with the Cookman Institute for Men at

1928

• Amelia Earhart is the first woman to cross the Atlantic (as a passenger) in an airplane.

1933

• Frances Perkins becomes the first woman cabinet member in the United States, as secretary of labor.

1935

• Mary McLeod Bethune organizes the National Council of Negro Women as a lobbying coalition of black women's groups, and serves as president until 1949.

1937

• U.S. Supreme Court upholds a minimum wage law for women in the case West Coast Hotel v. Parrish.

1939

• Frieda Wunderlich is first woman elected dean of a university graduate school. She is dean of the Graduate Faculty of Political and Social Science, New School for Social Research.

1940

• One-fifth of white women and one-third of black women are wage earners. 60% of the black women are still domestics, compared with 10% of white women. Among Japanese American women workers, almost 38% are in agriculture and 24% in domestic service.

1941

• A massive government and industry media campaign persuades women to take jobs during the war. Almost 7 million women respond, 2 million as industrial "Rosie the Riveters" and 400,000 joining the military.

1943

• The U.S. medical establishment recognizes the "pap" smear for detecting cervical cancer. In 20 years cervical cancer drops from the first to the third most

• Stern College for Women founded in New York. The first funded as a Jewish institution.

1955

• Daughters of Bilitis, the first lesbian organization, founded in San Francisco.

1960

• U.S. Food and Drug Administration approves birth control pills.

• Women now earn only 60 cents for every dollar earned by men, a decline since 1955. Women of color earn only 42 cents.

1961

• John F. Kennedy creates the President's Commission on the Status of Women, chaired by Eleanor Roosevelt. Fifty parallel state commissions are eventually established.

• Kennedy creates the President's Committee on Equal Employment Opportunity.

1962

• Helen Gurley Brown publishes her best-selling *Sex and the Single Girl*, a celebration of the opportunities outside marriage now available to young women.

1963

• The Equal Pay Act, proposed 20 years earlier, establishes equal pay for men and women performing the same job duties. It does not cover domestics, agricultural workers, executives, administrators or professionals.

• Betty Friedan writes *The Feminine Mystique*.

1964

• Title VII of the Civil Rights Act bars employment discrimination by private employers, employment agencies, and unions based on race, sex, and other grounds. To investigate complaints and enforce penalties, it establishes the Equal

28 women found the National Organization for Women (called NOW) to function as a civil rights organization for women.

1968

• Shirley Chisholm (D-NY) is the first Black woman elected to the U.S. Congress.

1970

• First Women's Studies program founded at San Diego State University.

• Many colleges and universities become coeducational.

• The Association of American Colleges launches the Project on the Status and Education of Women, the first and oldest office within a national higher education association.

1971

• The U.S. Supreme Court, in the case Griggs v. Duke Power Company, rules that businesses must apply the same hiring criteria to men and women alike, thereby upholding the hiring provisions of the 1964 Civil Rights Act.

• Barbara Jordan, U.S. Democratic congresswoman, first black woman from the South is elected to Congress.

1972

• The Feminist Press starts "Women's Studies Newsletter."

• Title IX is passed prohibiting sex discrimination in most federally assisted educational programs.

• Congress extends the Equal Pay Act to include executives, administrative and professional personnel.

• Congress passes the Equal Employment Opportunity Act, giving the EEOC power to take legal action to enforce its rulings.

1973

• U.S. Supreme Court rules in Roe v. Wade that state laws prohibiting abortion are unconstitutional, except as they apply to the last trimester of pregnancy.

materials and model programs that encourage full educational opportunities for girls and women.

1975

• In general, the average female worker earns 57% of what the average male earns.

• Average annual salaries of female faculty members in universities are about $4,000 lower than those of men at the same institution.

• The Educational Testing Service of Princeton, New Jersey, reports that women with advanced degrees earn less than their male counterparts and are promoted less readily.

• The United Nations declares 1975 International Women's Year and sponsors first ever U.N. Conference on Women in Mexico City.

• The U.S. Congress directs the nation's military academies to admit women into their ranks by the fall of 1976.

1976

• Barbara Walters becomes first woman to cohost a national evening news program in the United States. Her salary is reported to be $1 million per year.

• The United Nations "Decade for Women" begins.

• The National Women's Studies Association formed.

1977

• The first national women's conference in the U.S. is held in Houston, Texas.

1978

• 49% of all women in the United States work, up from 31% in 1950; 48% of married women work, double the percentage in 1950.

• The Pregnancy Discrimination Act is passed in the United States, protecting women from being denied employment because of pregnancy.

• For the first time, the number of women in the United States holding professional jobs is greater than that of men, by 29,000.

• About 25% of scientists are now women, but they are still less likely than men to be full professors or on a tenure track in teaching. Only 3.5% of the National Academy of Sciences members are women (51 members); since the academy's 1863 founding, only 60 women have been elected.

1987

• U.S. Supreme Court upholds a California law obliging employers to grant pregnant women up to four months' unpaid leave.

1992

• Women are now paid 71 cents for every dollar paid to men. The range is from 64 cents for working-class women to 77 cents for professional women with doctorates. Black women earned 65 cents, Latinas 54 cents.

1993

• National Center for Curriculum Transformation Resources on Women founded at Towson State University.

• The Family Medical Leave Act finally goes into effect.

1994

• Congress adopts the Gender Equity in Education Act to train teachers, promote math and science learning by girls, counsel pregnant teens, and prevent sexual harassment.

1996

• Virginia Military Institute and the Citadel become coeducational, the last all-male public institution and all-male military institutions in the U.S. to do so.

• Madeleine Albright is designated the first female U.S. secretary of state.

1998

• U.S. Air Force Lieutenant Colonel Eileen Collins is named the first female space shuttle commander. Collins also holds the distinction of being the first female shuttle pilot.

2000

• Hillary Rodham Clinton says she'll run for the U.S. Senate while still First Lady.

Compiled from the National Women's History Project, Famous First Facts, *1997, H.W. Wilson Co.*; The Encarta 2000 New World Timeline, *1998, Helicon Publishing Ltd.*; Historical Dictionary of Women's Education in the U.S., *Greenwood Press, 1998.*

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in brief

UW-Madison Leads New Black Studies Consortium

All the Women Are White, All the Blacks Are Men, But Some of Us Are Brave: Black Women's Studies will be revised in time for the book's 20th anniversary in 2002. The University of Wisconsin-Madison will host a three-day planning meeting in June 2000 to kick off work on the new edition that will be published by the Feminist Press.

This activity is the first event undertaken by a four-university consortium on Black Studies funded by a $600,000 grant from the Ford Foundation. Other university partners are Carnegie Mellon University, the University of Michigan, and the Michigan State University.

Subsequent seminars and symposia will focus on black urban studies and race in the 21st century. The latter event will emphasize the relationships between and among African American, American Indian, Latino and Latina, and Asian American populations.

Grant coordinator Nellie McKay, a UW-Madison professor of Afro-American Studies and English, says the important goal of the grant is to acquaint both scholars and the general public with research and other activities in the field.

"The first step is to explore what technologies currently are available to make research findings more readily accessible. Our ultimate goal is to increase the role of Black Studies in the creation of a public policy more responsive to the complicated realities of our multi-racial society," says McKay.

The consortium will also develop outreach initiatives with K-12 school districts through programs in theater, music, and visual arts; and establish new ties and strengthen existing ones with historically black colleges.

New Women's Studies Graduate Programs at UCLA

The University of California, Los Angeles (UCLA) Women's Studies Graduate programs will offer a Ph.D., M.A., and concentration in Women's Studies beginning in the fall 2000. The UCLA Women's Studies Program began in 1975 through its undergraduate curriculum. In 1989, the Program began the process of creating a graduate curriculum.

The goal of the Women's Studies Graduate Program is to educate teachers, researchers, and professionals in the interdisciplinary field of Women's Studies. The highly selective program will admit only five students per year.

Faculty from 22 departments and 8 professional schools will teach courses on a range of topics including women's health, feminist theory, feminist jurisprudence, multicultural feminism, women's history, women and work, and women in a global context.

The Ph.D. program is designed to prepare students for an academic career in Women's Studies. The M.A. program enhances the professional experience gained by individuals currently working in social service agencies or non-governmental organizations that deal with women's issues. The concentration in Women's Studies enables graduate students currently enrolled at UCLA to develop interdisciplinary knowledge of feminist theory and issues.

For more information email the UCLA Women's Studies Graduate Program women@women.ucla.edu or visit their web site: www.women.ucla.edu

NEW Leadership Development Network Needs Partners

Only 15.4% of first-year women college students think influencing political structures is a priority and only 26.5% of those students consider it important to keep up to date with political affairs according to a recent UCLA study.

To remedy these stunning statistics, the Center for the American Woman and Politics

In A Nutshell

Women Make Gains in Ph.D. awards

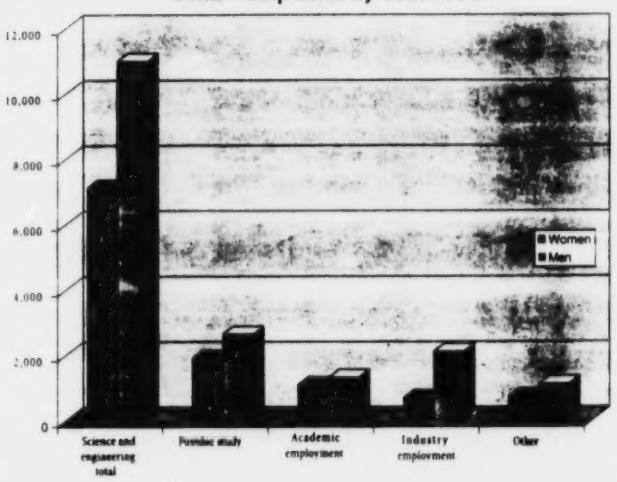
In 1998 women continued to increase their proportion of the Ph.D. pool. Among U.S. citizens, women now earn 48 per cent of all doctorates awarded —or 13,452 of 28,218 degrees granted to Americans. That's up from 41% a decade ago.

For the second year in a row, men of all nationalities earned fewer doctorates from U.S. universities: 24,653, down from 24,944 in 1997. Women, by comparison, earned more: 17,856, up from 17,251 in 1997.

In the area of science and engineering, women received 34.3% of Ph.D.s, up from 28.1% in 1989.

—*From* Science and Engineering Doctorate Awards: 1998, *National Science Foundation, Division of Science Resources Studies, Arlington, Va., 2000.*

Postgraduate plans of science and engineering Ph.D recipients by sex: 1998.



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(CAWP), the oldest think tank on women and politics in the U.S., has embarked on a three-year project, funded by the Kellogg Foundation, to train colleges, universities, and non-profits in the National Education for Women's Leadership (NEW Leadership) model.

NEW Leadership, an innovative young women's political leadership education program, aims to teach students about women's historical and contemporary participation in politics and policymaking, connect students with women leaders making a difference, explore leadership in a diverse society, and build leadership skills.

Institutional partners in the NEW Leadership Network will participate in a three-day learning retreat where staff will learn the mission and curriculum of the NEW Leadership program and brainstorm their own approaches to young women's political leadership education. Partner institutions receive a $10,000 start-up grant.

To find out more about the NEW Leadership Development Network call 732/932-9384 or visit www.rci.rutgers.edu/~cawp

Supreme Court Hears Case on Violence Against Women Act

A case concerning a former Virginia Tech student who sued two Tech football players for allegedly raping her on campus is under review by the U.S. Supreme Court. According to the American Association of University Women (AAUW) Legal Advocacy Fund that is supporting plaintiff Christy Brzonkala, the case will test the constitutionality of the Violence Against Women Act (VAWA).

The case will set a legal precedent by which all other claims brought under the VAWA will be judged. The central issue is whether the U.S. Congress exceeded its power when it crafted the 1994 legislation that gives victims of gender-motivated violence the right to sue for violation of their civil rights. "We are supporting Christy's case because we recognize its impact not only for campus-based women, but for all women across the nation," says AAUW Legal Advocacy Fund President Sylvia Newman.

In her suit, Brzonkala states that in 1994, during her first year at Virginia Tech, she was attacked and raped in her dormitory by two football players. One man was found guilty of rape in an administrative proceeding at the Blacksburg, Va., school. However, the university never punished the rapist. Brzonkala sued Virginia Tech under Title IX and sued her attackers under the VAWA. In March 1999 the Fourth U.S. Circuit Court of Appeals ruled that the civil rights remedy of the VAWA is unconstitutional, but did allow Brzonkala's Title IX claim against the school to go forward. Other district courts have upheld VAWA's constitutionality.

A decision by the Supreme Court is expected this summer.

Presidential Awards for Science, Mathematics & Engineering Mentoring

The Presidential Awards for Excellence in Science, Mathematics, and Engineering Mentoring, administered by the National Science Foundation, is accepting nominations for outstanding mentoring efforts/programs designed to enhance the participation of groups underrepresented in science, mathematics, and engineering. The nomination deadline is April 14, 2000.

Presidential Award winners receive a check for $10,000 as well as a commemorative Presidential certificate. The award will be made to individuals who have demonstrated outstanding and sustained mentoring and effective guidance to a significant number of students at the K–12, undergraduate, or graduate education level or to institutions that, through their programming, have enabled a substantial number of students underrepresented in science, mathematics, and engineering to successfully pursue and complete the relevant degree programs. It is expected that each award will be used to continue the recognized activity. Nominees must have served in such a mentoring role for at least five years.

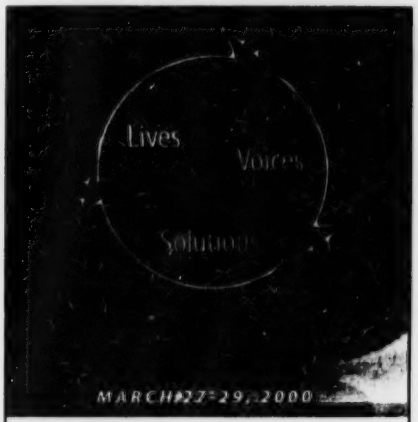
A detailed program announcement is available at http://www.nsf.gov/cgi-bin/getpub?nsf0041. Applications are available from the NSF web site (www.nsf.gov).

WISE Student Leaders Meet

Nearly 200 students majoring in science, engineering, and mathematics participated in the Women in Science and Engineering (WISE) Student Leadership Conference in October at Indiana University/Purdue University at Indianapolis.

In addition to discussing mentoring and how to discover their leadership potential, students attended workshops that provided practical advice on such topics as writing fundable grant proposals, applying to graduate school, dealing with sexual harassment or a hostile environ-

Continued on page 16



It's Not Too Late

Take Part in Women's Lives, Voices, and Solutions

This national forum at the University of Minnesota, will examine the progress made thus far by women in academe, address critical issues that affect women, and formulate an action plan "that both embraces the diversity among women and transforms institutions of higher learning."

AAC&U's Director of the Program on the Status and Education of Women, Caryn McTighe Musil, has served on the meeting's advisory planning board and will be featured in the teleconference opening and closing sessions. For more information on the conference, visit www.umn.edu/women/wihe.html.

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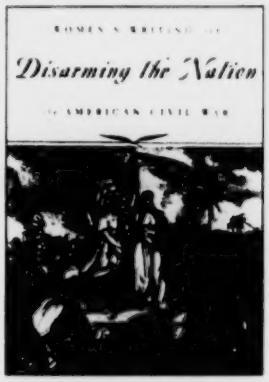
for your bookshelf

Humanities

Disarming the Nation: Women's Writing and the American Civil War, by Elizabeth Young (The University of Chicago Press, 1999). Young shows how the Civil War profoundly influenced American women writers and that, in turn, their works have contributed powerfully to conceptions of war and its aftermath. Young reassesses works by such writers as Harriet Beecher Stow, Louisa May Alcott, Margaret Mitchell, Elizabeth Keckley, Frances Harper, and Margaret Walker. In each case, Young explores the interdependence of gender with issues of race, sexuality, region, and nation. $18.00, paper. (The University of Chicago Press, 11030 South Langley Avenue, Chicago, IL 60628; www.press.uchicago.edu).

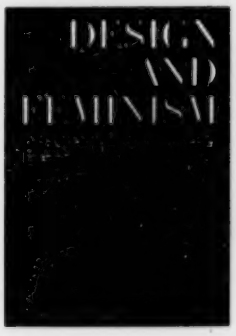


Grit-Tempered: Early Women Archeologists in the Southeastern United States, edited by Nancy Marie White, Lynne P. Sullivan, and Rochelle A. Marrinan (University Press of Florida, 1999).

The editors document the lives and work of pioneering women archeologists in the southeastern U.S. from the 1920s through the 1960s. Through stories of African-American women excavators on WPA crews during the Depression, innovative lab work, adventurous field work, and public archeology, *Grit-Tempered* describes the contributions women have made to archeological work in the South and the role gender has played in the development of the archeological record. $49.95, cloth. (University of Florida Press, 15 NW 15th Street, Gainesville, FL 32611; www.upf.com).

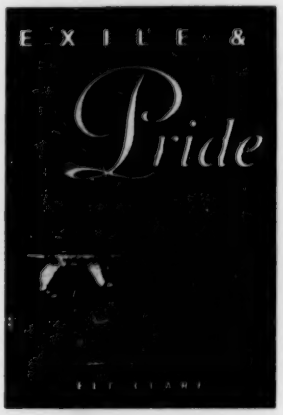
Television, History, and American Culture, edited by Mary Beth Haralovich and Lauren Rabinovitz (Duke University Press, 1999). Though the Golden Age of television has ended, the images transmitted by the small screen tell us about power, authority, gender, stereotypes, and ideology in the U.S. Through essays that focus on women producers, viewers, and characters in television dramas, this volume illuminates how television both reflects and influences American culture and identity. The contributors investigate how television has shaped our understanding of gender, power, race, ethnicity, and sexuality from the 1950s to the late 1990s. $17.95, paper. (Duke University Press, Box 90660, Durham, NC 27708; www.duke.edu/web/dupress).

Design and Feminism: Re-Visioning Spaces, Places, and Everyday Things, edited by Joan Rothschild (Rutgers University Press, 1999). As the distinction between public and private spaces and work and home become blurred, innovative designs are needed to meet the challenges of our ever-changing world. This collection of essays recasts architecture, design, and technology from a feminist perspective and answers the question of how reconceptualizing architecture can meet the needs of a diverse public. $25.00, paper. (Rutgers University Press, 100 Joyce Kilmer Avenue, Piscataway, NJ 08854; rutgerspress.rutgers.edu).

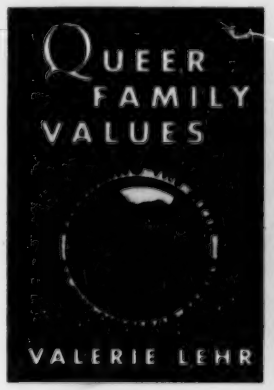


Social Sciences

Exile & Pride: Disability, Queerness, and Liberation, by Eli Clare (South End Press, 1999). Clare traverses the landscape of disability, class, queerness, and child abuse, telling stories that echo with the sounds of the Oregon town in which she grew up. Woven throughout her personal experiences is a discussion of the lively political debates concerning the environmental destruction caused by the logging and fishing industries that employed many in her town. $14, paper. (South End Press, 7 Brookline Street #1, Cambridge, MA 02139; www.lbbs.org/sep/sep.htm).

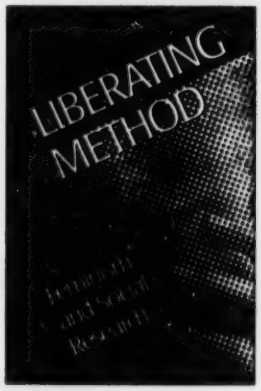


Queer Family Values, by Valerie Lehr (Temple University Press, 1999). Lehr argues that the flaw in the fight for gay and lesbian marriage rights lies in its failure to call into question the forms of oppression—gender, racial, and economic—that lead society to privilege the nuclear family. Lehr calls for activists to counter conservative discourses that see the nuclear family as the only responsible and mature family alternative and encourages them to advocate social policies that champion the freedoms of all people. Lehr also provides practical examples of how activists can work for a more compassionate society. $19.95, paper. (Temple University Press, 1601 North



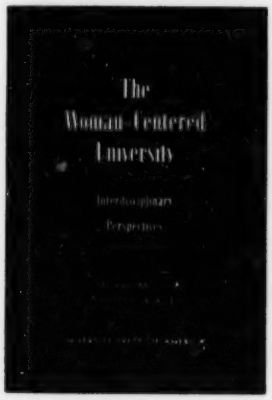
Broad Street, Philadelphia, PA 19122; www.temple.edu/tempress).

Liberating Method: Feminism and Social Research, by Marjorie L. DeVault (Temple University Press, 1999). In this volume, DeVault contends that feminist insights can and should contribute to a sounder, more rigorous social science. She argues that established methods of social research too often ignore social oppression. An exploration of the sources and meanings of feminist methodology enables DeVault to consider the exclusions and distortions in feminist research. She provides strategies for building more inclusive approaches. $19.95, paper. (Temple University Press, 1601 North Broad Street, Philadelphia, PA 19122; www.temple.edu/tempress).



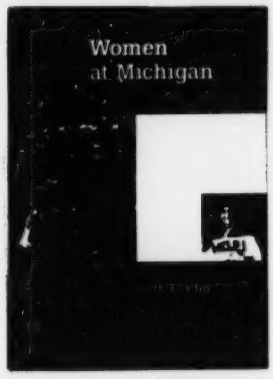
Campus and Classroom

The Woman-Centered University, edited by Melanie McCoy and JoAnn DiGeorgio-Lutz (University Press of America, 1999). The contributors to this collection of essays seek to move the university beyond its European male educational roots by transforming not only the curriculum, but also faculty and administrators, the teaching and learning process, and the university climate. Selected topics describe the culture of African-American women professors, compensation and satisfaction of male and female faculty, and how collaborative research can contribute to the formation of the woman-centered university by incorporating a female perspective. $25.50, paper. (The Rowman & Littlefield Publishing Group, 15200 NBN Way, Blue Ridge Summit, PA 17214; 800/462-6420).



Mount Saint Vincent University: A Vision Unfolding 1873-1988, by Theresa Corcoran, SC (University Press of America, 1999). This history chronicles the courage and determination of the Sisters of Charity to establish Mount Saint Vincent University, the only degree-granting college for women in Canada. Corcoran focuses on the dramatic growth witnessed by the institution over the course of the 20th century as religious, social, and political changes in society created new opportunities for women. She describes how the university ensured its future through strong female leadership and by listening to its students and providing new services and programs from day care to distance learning. $57.00, cloth. (The Rowman & Littlefield Publishing Group, 15200 NBN Way, Blue Ridge Summit, PA 17214; 800/462-6420).

Women at Michigan: The "Dangerous Experiment," 1870s to the Present, by Ruth Bordin (The University of Michigan Press, 1999). In her rich history of the experience of women at the University of Michigan, the late Ruth Bordin seeks to bring a new perspective to Dorothy McGuigan's *A Dangerous Experiment*, published in 1970 to celebrate 100 years of women at Michigan. Although she provides a chronicle of historical milestones, Bordin also builds a case for the changes that still need to occur at Michigan and in higher education to further extend the opportunities available to women. $29.95, cloth. (The University of Michigan Press, 839 Greene Street, Ann Arbor, MI 48106; www.press.umich.edu).



Science and Technology

Their Day in the Sun: Women of the Manhattan Project, by Ruth H. Howes and Caroline L. Herzenberg (Temple University Press, 1999). Because of manpower shortages, women participated in every aspect of The Manhattan Project, yet few know about their contributions. Howes and Herzenberg reveal the scientific problems women helped solve as well as the opportunities and discrimination they faced. The book's final chapter describes what happened to the women after the war and discusses their attitudes, 40 years later, toward their work on the project. $34.50, cloth. (Temple University Press, 1601 North Broad Street, Philadelphia, PA 19122; www.temple.edu/tempress).

Renaissance Women in Science, by Louise Q. van der Does and Rita J. Simon (University Press of America, 1999). In this first volume of the *Renaissance Women Series*, van der Does and Simon present the stories of 16 female scientists who unlocked the secrets of the universe and helped alter the course of global events. They describe what motivated them and what enabled them to overcome the barriers of their time and their gender. Among those profiled: Florence Sabin, Lise Meitner, Barbara McClintock, and Rosalind Franklin. $27.50, paper. (The Rowman & Littlefield Publishing Group, 15200 NBN Way, Blue Ridge Summit, PA 17214; 800/462-6420).

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technology

Gendered Roles in Online Learning

Gender is strongly associated with the learning styles of students who participate in distance education that relies on computer-based communications such as email, according to new research published in the *Journal of Asynchronous Learning*.

In a case study involving 149 undergraduate and graduate students attending a large U.S. distance education institution, researcher Kimberly Blum examined barriers to participation, learning styles, and communication patterns of online student messages. She argues that the differences found between male and female students who take part in computer-based distance education can be used to create a working model for distance education institutions that is equitable for both males and females.

To analyze the content of the online messages for gender differences Blum used Nud*Ist, a software package developed by Sage Publications which aides in analyzing massive amounts of qualitative data from common patterns. Models developed to study the learning styles of traditional students were used as a framework to compare male and female messages. The results showed that online students follow traditional students in that their learning style preferences differ by gender according to Blum, an online instructor with the University of Phoenix.

Blum found that when either a male or female posted a question, 58% more males responded than females. Males also posted 9% more messages than females. Neither pattern is conclusive when considered separately, says Blum, but the frequency of male responses to questions combined with a larger number of male postings suggests males control the online environment at the study institution.

When the content of messages was examined, Blum notes that male messages more often had a tone of certainty. These messages were slightly arrogant, brief, and not tempered by polite words to reduce negative reader reactions. Males were more abstract in their responses than females. Women's messages, however, tended to use more elegant language, and would contain, for instance, the word "acquire" rather than "get" to express the same meaning. Women also indicated a preference for collaboration in their messages rather than competition and more often included personal information and related this to the conversation.

The content analysis revealed several areas of concern for female online students. Females had more problems with software used to connect to classrooms, with software used to find information on the Internet, and other computer-related activities. They also were more often frustrated or worried about the fast pace of online courses. Of the messages posted that related to the fast pace, 62% came from women. Blum's case study found that female online students had lower confidence levels—lower overall confidence in the educational environment and with computers. These students also were more concerned about costs of distance learning and had less time to devote to online learning than their male counterparts because in addition to being primary caretakers, many in the study were also full-time professionals.

To help both male and female students to participate fully in online learning, Blum suggests that professors create a learning environment that promotes and encourages collaborative learning for females, but also allows males the freedom of learning in an abstract, autonomous manner. Instructors need to become facilitators and continually look for ways to build a sense of community for their students. Rules for online communication should be established at the start of each program and reinforced with each course so that students know what is acceptable online etiquette.

In addition to understanding communication and learning patterns, Blum recommends that organizations work to lower participation barriers for women. Among the recommendations to create a more female-friendly distance learning environment: a strong technical support department, instructors who can respond quickly to student queries, faculty mentor and student partner programs to improve confidence levels, and student orientation programs that introduce procedures for distance learning.

By considering gender differences in online learning, distance learning organizations can create an environment that provides equal opportunity to both male and female learning styles.

women @ technology

on the web

www.un.org/womenwatch/forum/index.html
The Beijing +5 Global Forum provides information on Internet working groups being organized to provide input for the June 2000 meeting of the United Nations General Assembly.

www.seniorwomen.com
Senior Women Web offers links on topics from computing and the Internet to politics and Campaign 2000 as well as specific links for senior women.

www.womenspace.ca/Campaign/sitemap.html
The Women's Internet Campaign works toward "equal access, equal participation, and an equal voice in information and communication technologies." The site includes essays, a message board, research reports, and more.

www.grantlady.com
For information on grant research, visit "The Grant Lady," Shakurra Amatulla, who since 1983 has demonstrated to women and nonprofit organizations creative ways to reach financial self-empowerment.

www.thewomensmuseum.org/
The Women's Museum: An Institute for the Future will open in October 2000. Visit the web site for a preview of planned exhibits that will honor women of history as well as suggest the challenges and hopes for both men and women in the future.

Email List
American Women's Internet Association email list is for women of diverse backgrounds involved with the Internet. To subscribe, go to www.onelist.com/subscribe.cgi/awia

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resource update

Calls

MentorNet seeks professionals to mentor women engineering and science students online. For more information visit the MentorNet web site www.mentornet.net.

Conferences

Women Opening Doors, Leading the Way, March 16-18, 2000, University of the Incarnate Word, San Antonio, Texas, examines the achievements by women who have either from the margins or from the center approached closed doors and discovered ways to open them. The conference also looks forward and anticipates those women who will follow and continue to open doors. For details contact Patricia Fite, 210/829-3886 or fite@universe.uiwtx.edu.

30th Anniversary Gala for The Feminist Press, April 3, 2000, Essex House, New York City features an exciting program of readings by authors and actors from the Press's anniversary book, *Almost Touching the Sky*. The evening will also celebrate Femmy and Crossing Borders award winners. For information call Jocelyn Burrell, 212/817-7921.

Gender and Work Space(s), April 14-15, 2000, at Binghamton University, Binghamton, N.Y., examines the interrelationship between gender and spaces of work created by changes in technology, globalization, laws, and public policies. Topics include "Gender and the Cyber Workspace," "The Multidimensionality of Gender at Work," and "Gender and the Organization of Labor." For more information contact The Women's Studies Program Office at Binghamton, 607/777-2815 or lael@binghamton.edu.

Mills College Women's Leadership Institute, 5th Annual Conference, April 15, 2000, Oakland, Calif., features a follow-up to the UN International Conference on Women held in Beijing, China in 1995. The national and international effort to ratify the Convention to End Discrimination Against Women will also be highlighted. To learn more contact Mills College, 510/430-2019 or edna@mills.edu.

The Institute for Emerging Women Leaders in Higher Education, June 24-28, 2000, sponsored by NAWE in partnership with Sodexho Marriott Services will hold its leadership conference at the Inn & Conference Center at College Park, Md. Deadline to apply is May 1, 2000. To obtain an application, visit www.nawe.org.

Summer Institute for Women in Higher Education Administration, will be held June 25-July 21, 2000 at Bryn Mawr College. This program offers women faculty and administrators intensive training in educational administration and covers topics related to academics, the business of higher education, and professional development. For more information contact Betsy Metzger, HERS Mid-America, 303/871-6866 or bmetzger@du.edu.

The National Coalition for Sex Equity in Education Annual Meeting, July 16-18, 2000, will be held at the Sheraton Denver West, Lakewood, Colo. The meeting will follow two tracks: Creating a Respectful, Safe Learning and Working Environment, and Policy, Legislation, and Practices. For details visit the NCSEE web site, www.ncsee.org.

Gender, Race, Class, and Region, July 27-29, 2000 will be held at Washington State University in Pullman. The conference examines questions such as "What connects women and place?" and "How are social relationships based on gender, race, class, and sexuality connected with region?" For details visit www.wsu.edu/~womenwst/home.html.

Resources

Nan Stein's newest work, *Classrooms and Courtrooms: Facing Sexual Harassment in K-12 Schools*, brings together the current state of knowledge about sexual harassment in schools, summarizing legal cases as well as the findings of major surveys. Stein also presents the words and experiences of students themselves. For more information contact Teachers College Press, 800/575-6566.

Rockefeller Resident Fellowships 2000–2001 invites applications for scholars examining the intersection of gender, race, and ethnicity in relation to modern and postmodern local and global structures. Applicants should hold a doctoral degree, possess an equivalent terminal degree, or demonstrate a substantial record of scholarly achievement. For details contact the Institute for Research on Women, Rutgers University, 732/932-9072 or rci.Rutgers.edu.

The Radcliffe Institute for Advanced Study at Harvard University offers The Jeanne Humphrey Block Dissertation Award Program, to support women graduate students studying girls' or women's psychological development. Proposals should focus on sex and gender differences or some developmental issue of particular concern to American girls or women. The deadline is April 1, 2000. For more information call 617/495-8140 or visit the Murray Center web site, www.radcliffe.edu/murray and click on "Grants."

The National Research Council offers postdoctoral and senior research awards for research in U.S. government laboratories in chemistry, earth & atmospheric sciences, engineering & applied sciences, life & medical sciences, space & planetary science, and physics. Generous stipends are available with the 12-month renewable awards as are relocation expenses and health insurance. Application deadlines are April 15 and August 15. For details call 202/334-2760 or visit nationalacademies.org/rap.

Women scholars with research interests in the higher education experience of women are invited to apply for the **AAUW Research Scholar-in-Residence Award for 2000–2001.** The Research Scholar-in-Residence will produce a report that will be published by the AAUW Educational Foundation. A stipend up to $45,000 is available. Visit the AAUW web site, http://www.aauw.org/3000/fdnfelgra.html for details.

Continued from page 1

20th century left American women a legacy, it is a legacy of sisterhood and of organizing. Sisterhood continues to be a work in progress, but women have begun to understand how important it is to enter each other's worlds so we can dream each other's dreams. And we have learned across the decades more about how to organize together to achieve those dreams. The series of United Nations conferences on women is emblematic both of a new global definition of sisterhood and newly acquired skills at mustering collective power worldwide.

Because progress for women has come in fits and starts, the challenge for us is to harness positive change before it sputters, and to use new sources of power to benefit everyone—men and boys as well as women and girls, those in the U.S. as well as those around the globe. Higher education can become one of the cornerstones to our forward movement.

Note

The comparison of women's lives, 1900 and 1999, comes from a paper produced by the National Teleconference Program Committee, Women's Lives, Voices, Solutions.

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- You really can't have it all. Set your goal for what is most important to you and makes your life happy, but realize that something has to give.
- Educate yourself; choose a career path that fulfills you, the person, not just the career woman; join professional organizations for idea sharing and networking; don't try to be a man in a man's world—be a strong woman in the world and in your life.

To obtain a copy of Suiting Themselves *contact the Radcliffe Public Policy Center, rppc@radcliffe.edu*

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ment, and research integrity. Students also toured campus laboratories including those studying auditory implants, bone dynamics, and computer-aided design.

The National Science Foundation and the 15 campuses of the Committee on Institutional Cooperation co-sponsored the conference.

Photos used in this issue of OCWW *include images from http://www.blackbirch.com/BBPTitles/library_women/albright.shtml; http://www.greatwomen.org/mkiller.htm; http://www.nps.gov/mamc/bethune/welcome/frame.htm; and www.artoday.com.*

About AAC&U

AAC&U is the leading national association devoted to advancing and strengthening liberal learning for all students, regardless of academic specialization or intended career. AAC&U is committed to making the aims of liberal learning a vigorous and constant influence on institutional purpose and educational practice in higher education.

On Campus With Women is the quarterly newsletter of AAC&U's Program on the Status and Education of Women (PSEW). With a quarter century of national leadership, PSEW is one of only two women's offices sponsored by a higher education association. PSEW's current priorities are curriculum and campus climate, promoting women's leadership, and disseminating new research on women and gender.

on campus women

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Director PSEW Caryn McTighe Musil

Executive Editor Debra Humphreys

Editor Susan Reiss

Vice President for Communications Joann Stevens

Production Editor Ann Kammerer

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on

women

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number 3

spring 2000

Academics Confront Aging

Sagging skin, hormonal changes, retirement accounts. Accomplishments, wisdom, freedom, empowerment. Welcome to modern maturity. By 2030 there will be 70 million older persons in the U.S., more than twice the number in 1998. Minorities will account for 25% of the elderly population.

As both women and men age, they confront new challenges. Time for reflection enables both sexes to peel back the layers and examine the subsurface of their lives. The individual may or may not like what is laid bare, but those interviewed for this issue of *On Campus With Women* stress that this period of reflection offers a time for reconciliation, renewal, and forward thinking. "As the body ages, it doesn't have to mean inevitable loss, but there are limits," says Phyllis Freeman, a co-editor of *Wise Women: Reflections of Teachers at Midlife*. The contributors to *Wise Women* gained strength from turning inward.

Gaining a quiet strength serves women well as they continue on their journeys past 45, 50, and beyond. Because women live longer on average than men do, women require a stable financial base. A top priority for women returning to school, mid-level, or even senior women, should be to ensure that their work remains interesting and that they can continue to work as long as they want or need to.

Although the wage gap has narrowed recently, women still earn substantially less than men. A 1999 TIAA-CREF report concludes that while much has been written about earnings differentials between men and women, women's earnings are the result of characteristics of the labor market. Many women reaching retirement today or in the next decade have had fewer years in the workforce, which leads to fewer years in the Social Security system, and smaller pensions. The way women invest also affects their pension outcomes. Traditionally less risk averse than men, women often choose low risk, and therefore, low return investment options. Women may also face discrimination in the area of investment advice. Other evidence indicates that women are given more conservative investment advice than men. Information is often obtained through discussions that take place within informal networks to which women are not included, such as on the golf course or over drinks after work.[1]

The amount of money a woman can earn throughout her career is often blunted by the responsibilities associated with care giving. "Women continue to disproportionately bear the costs associated with balancing paid work and family responsibilities and women who choose to work outside the home are disadvantaged in a labor market that is not family friendly."[2] Women of color appear to be especially affected in this area because of the strong cultural ties to family characteristic of many ethnic groups. Adequate work/life programs provide a valuable resource for both women and men facing care-giving challenges. Today's workplace and educational environment need to provide flexibility and continuing opportunity.

Preparing for life in the sixth, seventh, and eighth decades requires the same strategic thinking used to build a successful career. In their article "Stubborn Problems," published in *Women and Aging* (December 1998) Lou Glasse, a noted advocate for older women, and Marjorie Cantor, gerontologist and author of *Growing Older in New York in the 1990s*, outline the significant challenges women will encounter as they grow older. "The biggest challenges for midlife and older women will continue to be income inadequacy, a lack of health care access, and the financial challenges of long-term care. . . . The current problem of costly and fragmented long-term care will escalate with more people living longer but with smaller families to provide care.

To meet these challenges, women need to:

- Expand their knowledge about financial options and financial planning,
- Improve skills that may lead to greater employment opportunities,
- Determine projected pension and Social Security income relative to future needs,
- Be proactive with regard to health, and
- Work with others to overcome gender bias and to promote policies that address family needs such as universal health insurance, a viable system for

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focus on women and aging

Unfinished Business: When Older Women Return to School

Students over age 40 represent the fastest growing age group in post-secondary education, according to the American Association of University Women (AAUW) Educational Foundation's report "Gaining a Foothold: Women's Transitions through Work and College." And although adult students now account for nearly half of college enrollments overall, significantly more women than men feel that their age poses a barrier to college. Whether a woman is returning to graduate school at 40 or starting an undergraduate program for the first time at age 50, finding the right program and institution are critical.

Making the Transition to Student

Dian Belanger, AAUW Educational Foundation program vice president, returned to school at age 40 to do graduate work. "I was very worried I would disgrace myself," she says. "I had assumed I would go back to school, study all night, and work like crazy. I had commitments beyond the classroom and was not eager to have my children running footloose."

She hadn't bargained for countless hours spent at the Library of Congress and at other major libraries. She describes children as a double whammy for returning students. "They provide an enormous incentive for going back to school, but at the same time enormous barriers are created when child care is unavailable," she says. "As educational institutions learn more about the situations students face, they need to pay attention and provide support in the form of child care, and academic and financial counseling."

To overcome the information gap for students like Belanger, AAUW has started a series of Transitions Conferences based on results of the "Gaining A Foothold" report. "If the 'track,' 'pipeline,' and corporate 'ladder' were the straight-line metaphors of work and education in the 20th century, the metaphor of the 21st century may well be the 'spiral,'" says AAUW President Sandy Bernard. "The spiral captures the likelihood that women will move in and out of formal education throughout their lives, by choice or necessity, to fulfill a variety of economic and personal enrichment goals. To address this challenge, AAUW is hosting Transitions Conferences in cities across the country to prepare women to return to school later in life."

The Transitions Conferences enable women to examine their motives for returning to school as well as provide mentoring and advice throughout a student's career. AAUW branches work with a college or university to sponsor a one-day conference to encourage women by addressing some of the obstacles they face in returning to school. The event also helps raise institutional awareness about the needs of returning students. For branches unable to plan a full-day conference, the general program can be altered to create a series of seminars on topics such as financial aid and admissions requirements. The conference can also be adapted for at-risk high school girls because many of the issues covered in the conference are relevant to traditional age students who are not on the "college track."

Donna Carty who is co-chairing a Transitions Conference in Naples, Fla., has titled the conference Transitions 2000 WINNER Symposium—Women in Need of Necessary Educational Resources. "We wanted an acronym with a positive emphasis," she says. The November conference will address the gap in the need for jobs in the local area and what schools are feeding into the pipeline. "We want to make sure we focus on those who want a career change or who want a career—period," says Carty. Reaching out to all socio-economic levels is a goal of the conference. By providing transportation and financial assistance for residents of Collier County, Fla., the local branch hopes to attract stay-at-home mothers who might not realize the kinds of local resources available to them.

Because of the important role community colleges play in helping women return to school, organizers have been careful to include them in the planning of the conference. Seven schools are participating in the event: Edison Community College, Florida Gulf Coast University, Nova Southeastern University, Walden, International College, Collier Adult School, and Barry College. "Community colleges are so great because they are community-based and each has a personality and culture related to the community it serves," says Carty. "They can work with employers to tailor the curriculum to the community's needs." The flexibility offered by community colleges with morning, afternoon, evening, and weekend classes enables students to balance studies with full-time or part-time work. Women make up 58% of all community college enrollees. Of those enrolled in community colleges in the fall of 1997, 29% were females 25 and older.[1]

Carty's own enthusiasm for a college education is spilling over into the planning of the Transitions Conference. "The women's movement hit my freshman year and I was at an all-girls college. My parents wanted me to be a teacher, but I wanted to go into business." Carty dropped out of school, got married, and had a baby. Her husband's employer, Digital Equipment Corporation (DEC), offered 100% tuition reimbursement. Carty herself got a full-time job with DEC and earned a degree in business. She stayed with DEC, became a single parent, and at mid-career earned an MBA through the DEC tuition program. "Fifteen years ago just about every high-tech firm offered 100% tuition reimbursement. Now many are dropping this benefit," she says.

"With the Transitions Conference we're trying to show young women who didn't get to college at all or couldn't afford it, that college is possible," says Carty. "We want to show them that we have members who had six children and then went to school. We want to make sure that women know what jobs are out there. To not have earning potential is a killer from my perspective."

The Naples Transitions Conference will feature career tables, active mentoring during the breaks, inspirational speakers, and panel discussions. "We're helping the community by encouraging women to go to college. It's a win-win situation," adds Carty.

Capitalizing on Experience

Programs geared specifically to adult students can provide a nearly seamless transition for students new to the rigors of academe including plenty of one-on-one advising and mentoring. One such program is DePaul University's School for New Learning (SNL), which the Council for Adult and Experiential Learning and the American Productivity and Quality Center recently cited as a model program for adult learning.

A competency-based curriculum requires students to demonstrate strengths in 50 areas. Students are evaluated through proficiency exams, research papers, writing assignments, and performance. Since its beginning in 1972, the SNL has gradually seen enrollments shift from predominantly male to predominantly female populations. Currently 72% of the 3,000 students enrolled in the part-time program are female. Twenty-nine percent are persons of color. Women are particularly effective in SNL's individualized program, and 84% of SNL's recent graduates are female. The average student is a 36-year-old female who works full-time and takes classes part time.

Institutions also need to help women see how the skills they've developed in managing, leading, and problem-solving in their lives can be adapted to enhance their academic experience.

To ensure students make a good fit with the SNL, the school has devised a three-pronged approach to admissions counseling. Prospective students participate in a free, general information session that leads to one-on-one advising. They can also attend a workshop that asks students to consider why they are returning to school and what support systems they have to help them succeed. The workshop also discusses barriers to returning and how to overcome them. "It's very effective, in the presence of strangers who are in similar situations, to consider whether one has the energy and focus to attend college at this time. It is also inspirational to see that others have similar problems designing creative solutions. Some prospective students think, 'If others can do this, so can I,'" says SNL Dean Susanne Dumbleton.

Participants also often disclose what their academic experience has been up to this point. The next step is to enroll in a Foundations course and select a faculty mentor and professional advisor. In the Foundations course students consider what direction they want to take—in their career or personal lives—and develop a plan to learn what they need to do to reach their goals.

"The responsibilities of adult life pose the biggest hurdle for women returning to school," says Dumbleton. "They have huge demands on their time. Although men often receive support from their families when they return to school, women often find that they are adding yet one more thing [to their lives] that they must do alone. Some women experience a degree of guilt around returning to school because they see their schooling as taking money and time for themselves that could be used for their children."

Because students must juggle job, school, and family, the SNL works to provide a flexible arrangement for students to complete their degrees. "Once a student has made the commitment to return to school, we try to make it possible for them to continue—even if they are interrupted," says Dumbleton, who adds that many find it necessary to break their studies. "It is important for us to allow them to do that in order to care for the many other parts of their lives. But it is also important for us to let them know that the sooner they can resume their studies the better. When a student becomes inactive for a prolonged period, it becomes easy to remain inactive."

The faculty who teach at the SNL are selected because they want to focus on students. "When we hire, we hire people who are student-focused and not content-focused," says Dumbleton. The school has worked to broaden the diversity of faculty as well.

Catherine Marineau teaches a course on women's psycho-social development at SNL. "Older women come with a wealth of life experience. Many have wanted to start or resume their college education for a very long time. Many have put their husbands through graduate school or supported their husband's career by taking care of the home front and now it's their turn."

Marineau stresses that the institution's attitude toward older people makes a big difference in the kind of academic experience they have. "It's so important to convey respect for their desire to come back," says Marineau. Institutions also need to help women see how the skills they've developed in managing, leading, and problem-solving in their lives can be adapted to enhance their academic experience. "These women don't often consider that these skills will serve them very well in managing their academic life or that their life learning experience may be translated into academic learning," says Marineau.

Older women in the classroom present a win-win situation for all, says Marineau. "They set a standard. They are often very well organized, eager to go beyond course requirements, and they reach out to younger students." They also possess the ability to interpret their experiences better than younger students.

One of Marineau's students, Judith DeVries, is just such an example. She had three teenagers at home and her husband traveled. She liked SNL because of its flexible course schedule allowing evening and weekend courses and the availability of competency credits for work experience. "It's not an issue if your college credits are 20 years old," she notes. She holds a full-time job as director of Client Operations for Reid Psychological Systems. After obtaining her bachelor's degree in liberal arts with a focus on women's studies, DeVries plans on attending the Lutheran School of

Continued on page 16

focus on women and aging

Older Lesbians

"Women are not engaged in a dialogue on aging and ageism," says Sharon Jacobson, a professor at SUNY-Brockport who has done research on the lives of older lesbians. "Fear of aging is inherent in society and keeps many feminists quiet. We don't want to face our own aging."

The lack of interest concerning issues related to older women was evident when Jacobson joined the National Women's Studies Association (NWSA) last year and tried to attend a meeting of the Age and Ageism Caucus at the NWSA annual meeting. "No one showed up until the very end," she says. Those who gathered decided to revitalize the caucus that was idle at that time. They wanted to ensure that the 2000 NWSA meeting included sessions on aging. This year's meeting will feature two consciousness-raising workshops. The first is on ageism in general and the second is on ageism and health. Papers on old women will be part of panels focusing on the relationship of the researcher to the research, and a session on women's leisure. The Aging and Ageism Caucus will be part of a joint caucus session on the interlocking systems of oppression.

In addition, Jacobson is leading an effort to develop annotated bibliographies on topics that can affect older women such as social security discrimination and the link between aging and poverty. The caucus also plans to compile syllabi from women and aging courses as well as lists of relevant web sites by and for older women. All information will be available on NWSA's web site (www.nwsa.org).

Several of the women in Jacobson's study of older lesbians had worked in academic settings and encountered and dealt with stigma, prejudice, and discrimination throughout their professional and personal lives. These women expressed similar reasons for remaining closeted while employed in academic settings. One woman had seen a colleague fired because she was rumored to be a lesbian. As a result she made conscious decisions and plans about what she could do to pass as heterosexual. Another woman talked about attending social events on campus with particular single men on campus. Another woman did not take such overt measures, but chose not to enter into a committed relationship the entire time she was employed in academe. It was not until they retired from academia that these women began to feel safe about considering being open about their sexuality.

Being able to distinguish between the systems of oppression that influence and shape the lives of older women in academe or elsewhere is difficult. "You can't clearly separate what is race, class, age, gender, or sexuality," says Jacobson. "The systems are interlocking and it is difficult to always know which system or systems of oppression are at play."

Women of Color

A recent study on the gendering of historically black colleges and universities (HBCU's) by Florence Bonner, chair of Howard University's Sociology and Anthropology Department, reveals that as women academics move through their careers, particularly those at HBCU's, they still receive lower pay, are tenured less often, and hold fewer positions of real power. "While African American and other women outstrip men in graduation rates and in terms of hires, if you disaggregate the data, women are still in places that pay less than what men get paid," explains Bonner. "At HBCU's, the disparities grow greater and greater when comparing men of color to women. This is not an indictment of the HBCU's, but the real challenge is to address these issues by putting information forward and letting people see that these disparities exist." Bonner's findings will be published in an upcoming issue of the *Review of Higher Education*.

For older Asian women in academe, maturing does not always mean increased respect. "It's not necessarily true that you get more power as you age," says Shirley Hune, author of AAC&U's *Asian Pacific American Women in Higher Education: Claiming Visibility & Voice* and associate dean for graduate programs in the Graduate Division at UCLA.

Interviewees in her study reported that Asian American women are often not taken seriously as academics and professionals in their own right and have their expertise and leadership dismissed because of their presumed "permanent foreigner" status and their oftentimes small stature, in spite of their years of experience and qualifications.

"Obtaining a deanship, for instance, may take some women longer, especially women of color, women from working-class backgrounds, and those who are the first in their family to choose a career in higher education," says Hune. One reason women take longer to obtain the milestones of a career in administration is the circuitous route they often follow in academe. Many start a higher education career late, having done something else first. Moving because a spouse gets a new job, or leaving the academy and returning after children, or not considering positions elsewhere to remain close to family and community decreases a women's ability to develop a strategic plan for her career and stick to it. "Ageism can also mean that you're not thought of for a particular position. If you haven't achieved a certain level by a certain age, then you may be considered too old for that position," says Hune.

Although the older woman of color's experience as an administrator or faculty member depends on the individual and the institution, increasing their numbers and the support they are given will create a more balanced playing field for both men and women. "We've made the leap that the gap is closing," says Howard's Bonner. "All of it's true, but when you look at many outcomes, women are still in the same place."

focus on women and aging

Capitalizing on Challenges

According to a 1995–96 survey of American faculty by the Higher Education Research Institute, 75% of faculty women are age 40 and above. Their average age is 45. As the age of faculty women and administrators increases, institutions will need to examine how this constituency's needs are met. For their part, women in academe need to be strategic about their careers and how to build their own strong futures. Here are some of the not-so-traditional issues facing maturing women on campus.

"Academics already are the longest lived professionals," says Jeanne Bader, co-director of gerontology at California State University at Long Beach. "The increasing longevity of the subset of long-lived persons who will age with disabilities is going to pose new challenges for society as well as campuses. More and more faculty, staff, and students will request reasonable accommodations. Given women's socialization and the fact that [safer] environments benefit parents of young children as much as persons with disabilities and older persons with functional limitations, I anticipate that women will bring this issue out into the open and promote universal barrier-free design."

Maturity brings new insights into the art of teaching, yet for many this new freedom is tempered by a continuing struggle for space, recognition, and equity outside the classroom.

Another challenge facing women is the increasing demand for parent-, as well as, child-care. As women have increased their numbers on campus, more women can share their experiences. But the life patterns of these women are not always in sync. A 57-year-old woman may have grown children and grandchildren while a 48-year-old woman may have a six-year-old of her own. "Both men and women and both faculty and staff need training as parent caregivers, but that is hard to come by," says Bader. "On campus they need to be able to share their care-giving experiences with others in order to negotiate the unique circumstances that academic life affords and imposes."

In the classroom, maturity brings new insights into the art of teaching, yet for many this new freedom is tempered by a continuing struggle for space, recognition, and equity outside the classroom. "It's very clear that as women age they have more of an ability to mold their classroom," says Jean O'Barr, Margaret Taylor Smith Director of Women's Studies at Duke University. "Outside of the classroom, many women are so tired of having to fight for everything that they often find an arena other than the university within which to share their talents." Adds Bader, "As aging is added to the mix of excuses for excluding colleagues from decision making and opportunity structures, some women and minorities will confront triple jeopardy."

Age discrimination is less of an issue at community colleges than at research institutions says Martha Nesbitt, president of the American Association for Women in Community Colleges. "We have a different culture at community colleges," she explains, noting that the emphasis on teaching rather than research provides more flexibility for women. Nesbitt does note that women who become community college administrators tend to be older than their male counterparts. "If you look at the total number of women presidents at community colleges, women still have not achieved parity with men." In 1991, 89% of community college presidents were male and 11% were female. By 1996, 82% were male and 18% were female. Roughly one-third of all community college presidents hired during the 1997-98 school year were women.[1]

To raise issues that women are confronting they need to push for the time, space, and formats required to prioritize action steps. "This requires more than a commission on women. It requires a shared investment in moving forward," says Bader. "Administration shapes the climate for moving forward, so campus leadership involvement is essential. Because every campus is part of a larger community whose values shape its priorities, political involvement as well as off-campus visibility and service are essential in shaping on-campus climates, especially for junior faculty."

Looking Back, Looking Forward

At the beginning of a career the experts interviewed for this article suggested women find a niche within a field and build expertise in that area. Active involvement in a professional organization and strong networking skills provide a wide net that can help with future job opportunities. It also helps to develop a group of colleagues and friends for professional and personal support. As they move through their careers, senior women offer invaluable opportunities for mentoring and role modeling.

"One of the benefits of aging is that one no longer needs to analyze the positive changes in one's life in order to savor them. One can concentrate on removing barriers and capitalizing on challenges," says Bader.

Note

1. Phillippe, Kent A., and Madeline Patton. 1999. *National Profile of Community Colleges: Trends & Statistics.* 3rd Edition. Washington, D.C.: Community College Press, American Association of Community Colleges.

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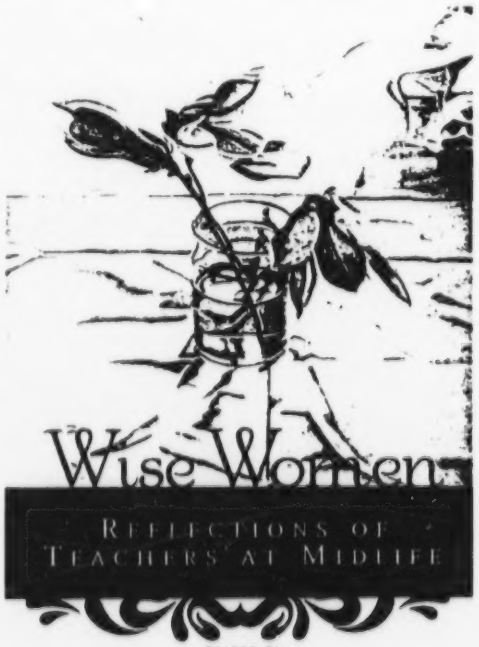
women's leadership

Midlife Reflections on Teaching

In Wise Women: Reflections of Teachers at Midlife *(Routledge, 2000), editors Phyllis R. Freeman and Jan Zlotnik Schmidt bring together the voices and journeys of 27 women in their fourth and fifth decades of life to provide a new and refreshing look at the intersection of the personal and professional lives of women in academe. Freeman is an associate professor of psychology and becomes Dean of the Graduate School at SUNY New Paltz July 1, 2000. Schmidt is professor of English and coordinator of the composition program at the SUNY New Paltz.*



OCWW: *Very little has been published examining the intersection of the professional and personal lives of women in academe. Why did you feel it important to embark on the* Wise Women *project?*

Freeman & Schmidt: In our own research, we found that although many women have written about aging and menopause, few have connected these experiences to their own working/teaching lives. The overall menopause literature is large but even in personal spaces on-line where self- reflective discussions of sexuality, personal challenges, trauma, and triumphs abound, discussion of menopause and its impact on professional experience mostly is absent.

Women teachers need to tell their own stories. Our experienced colleagues often told us that they felt they'd changed as teachers but hadn't ever given voice to these feelings, and women beginning the teaching life at middle age thought they brought something to teaching they could not have as younger teachers. From these conversations the idea for this book took shape.

We began the *Wise Women* project to explore the lived experiences of middle-aged teaching women. We hoped the project might provide answers to the questions we had been asking about our own lives as we turned fifty and each of us celebrated 25 years of university teaching. Having been so reflective in other aspects of our professional careers, we felt ready to examine these aspects more closely.

OCWW: *The project was done in a reflective and collaborative manner. Many of the women you admired but didn't know. Why did they want to be part of this project?*

Freeman & Schmidt: The idea for the book came out of a series of lunches that we had where we discussed turning 50. We began a journal exchange to articulate and reflect on these changes in our lives. We held email exchanges with potential contributors and eventually formed a kind of "circle of knowing" with our collaborators: other women teachers who were willing to talk about this middle passage. The impetus for the volume really was a merger of the personal, the professional, and the intellectual sides of our lives.

We know that some women who didn't decide to join our volume seemed insulted to be counted as "old" or felt uncomfortable writing in autobiographical style, or were too busy (a constant women's issue), or didn't feel "biologically" at midlife. Those who agreed to write did so with great enthusiasm. The autobiographical style of the volume gave us an opportunity to do that "second living" that Patricia Hampl wrote is so vital for each of us and for our society.

Many women at midlife suddenly do feel free to give voice to material and to explore areas that would have been unthinkable at earlier career and life stages. Isn't this part of the promise of midlife, to be freed from those constraints and concerns of youth and inexperience?

OCWW: *What can we learn from the midlife reflections offered by the essayists in* Wise Women *especially in the ways we connect or disconnect from our bodies. For instance, in light of Jean O'Barr's comments, "My body became more than a convenient place to carry my head . . . I came to understand that what I do in one sphere of my life has profound influences on what I do in others."*

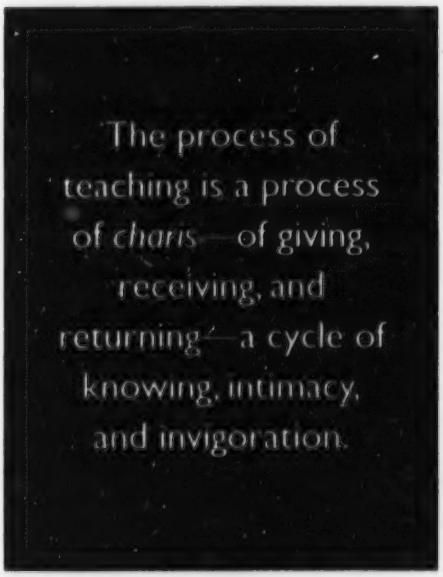
Freeman & Schmidt: "That heavy bear that goes with me," in the words of Delmore Schwartz—our bodies are so tied to living in time—our biological cycles tied to the moon and our professional competence influenced/judged by our appearance—that it must take great effort for us to disconnect head/heart/body/soul. Yet many of us do so because, as one potential contributor wrote us, our female body can get in the way. She told us that she had spent her entire professional career ignoring her female body (even during two pregnancies) in order to fit in with her male colleagues and to be taken "seriously." But how can we be whole-bodied, authentic people without being fully *with* our bodies?

OCWW: *The essays range from very personal journeys of discovery to more practical discussions of society and institutions. Why is it particularly important for those in leadership positions within institutions to consider*

such a range of experience?

Freeman & Schmidt: Although they do range from personal journeys and narratives to more practical discussions of professional growth and place within institutions, the essays in our anthology present some common concerns:

- Often times at the start of a career, there was a sense of "improvisation," of creating a place in the academy for the integrated, often multidisciplinary work that women are committed to. For example, Sue Rosser talks about the beginnings of her interest in women and science and sees it as bridging fields of biology and women's studies. What began as improvisation has emerged as a multi-disciplinary focus that is healthy for institutional and professional growth.
- There is a sense of a different collaborative ethos apparent in these essays. Several of the women talk about the need for community and collaboration. This sense is important for administrators to understand.
- Models of feminist teaching emerge in these essays—ones that integrate the subjective and objective realms, thought and feeling, critical inquiry, and imaginative endeavor.
- There is a sense of teaching as a way of knowing—both for students and for faculty members—that is quite enriching.


The process of teaching is a process of *charis*—of giving, receiving, and returning—a cycle of knowing, intimacy, and invigoration.

OCWW: *Many of the women who contributed to* Wise Women *followed unconventional paths to achieve their career goals or ended up in their positions as a result of following a partner. How important is developing a strategy and how much can be left to chance?*

Freeman & Schmidt: Many of the essays present careers as a matter of both planning and happenstance. Perhaps what is most important in these stories is that the women took ownership of their lives and choices—and made the most out of unconventional choices. There is a famous Theodore Roethke poem—"The Waking" in which the speaker states: "I learn by going where I have to go." That approach characterizes many of the journeys in this volume.

OCWW: *Entwined within many of the essays is a tone of reconciliation with self, acceptance, and mellowing. Often the authors say they offer students more today than they did 25 years ago. What advice do you have for early career teachers? How can they learn from these wise women? For older women who may be searching for their voice and want share their experience?*

Freeman & Schmidt: There is a wisdom that comes with the recognition of aging. All cannot be accomplished. We all cannot be perfect. We have to let go of standards of perfection and even some cherished beliefs. As we let go of these demands we make upon ourselves, we also learn how to be more open to others. Midlife seems to be a time, for many of the contributors, of being more welcoming to change, to flux, to unpredictability, to risk. This time in life became an opportunity for reassessment of one's values, approach to living, work in the academy, and relationships. Women seemed to move from the "schoolroom"—the room with rows of chairs—as Jane Tompkins suggested—to a fuller embrace of life's mysteries, uncertainties, and riches. The essays in *Wise Women* often reveal a tension between confronting the diminishments that come with age (e.g., loss of idealism, confrontation with illness and death) and the desire to embrace life more openly—having put aside some of the "shoulds." This is wisdom that is important for young people beginning in the profession to understand. Life in the academy can be fulfilling without focusing on those seven books for tenure!

OCWW: *Describe the vital role teaching has played in your lives. Can teachers ever really retire?*

Freeman & Schmidt: Jan's mother, Mae Zlotnik, is an 85-year-old social studies teacher and department chair, and she just helped her daughter teach a unit on the U.S. Constitution and the Bill of Rights. She sent Jan articles about Sally Hemings and freedom of speech cases related to the Bill of Rights. Jan could see that her mindset continued to be: How can I make the topics of the course relevant to students' lives? How can I enliven the material? How do I help students make the connections between their worlds and the worlds of the text?

Teaching has been a way for both of us to continue to see the material we teach in fresh ways. As Phyllis wrote in her essay, with each new group of students we gain new perspectives; their visions of the material, their connections with the works studied, expand our own understanding of the subject matter. In addition, students' questions lead us to consider who we are in the classroom, so that in the process, we become richer, fuller human beings.

As Phyllis suggests in her essay, the process of teaching is a process of *charis*—of giving, receiving, and returning—a cycle of knowing, intimacy, and invigoration that has enriched us. Why end this essential part of our lives?

women's learning new research

Women and Engineering: Assessing the Climate

By Charmion Gustke, *Intern, Program on the Status and Education of Women*

Over the past three decades, women have gradually made inroads into traditionally male-dominated fields such as medicine, law, and business. By 1996, approximately 49% of professional psychologists, 40% of judges and attorneys, and 33% of small business owners were women. Despite these achievements, the numbers of women in the field of engineering remain small. In 1996, for instance, only 17% of bachelor degrees in engineering were awarded to women and women held only 7% or less of engineering jobs. Several new studies examine why so few women major in engineering.

In two separate articles in the *Journal of Women and Minorities in Science and Engineering*, Connie Meinholdt and Susan Murray (Vol.5, No. 3), and Charlene Yauch (Vol. 5, No. 2) suggest two contributing factors for the gender discrepancies in engineering departments across the country. According to Meinholdt and Murray, male engineering students have negative attitudes toward women. The social psychological climate within the culture of engineering may be exclusionary and even openly hostile towards women students. Furthermore, Yauch found that women are ridiculed on campus for entering certain engineering disciplines. For example, industrial engineering, a popular field for women, is negatively termed "Imaginary Engineering" by some men. Because there are few women faculty and students, women often experience isolation.

Using data from two national studies, Yauch found that "the strongest predictor of an engineering major is gender" not race or class. Another important factor for the disproportionate number of women in engineering departments, says Yauch, is inadequate support for young women interested in a career in engineering at the high school level. Test scores have shown that young women start questioning their abilities at the high school level and it is therefore crucial that they receive encouragement from teachers, administrators and, perhaps most importantly, parents. Yauch argues that a strong high school support network prepares young women to face the challenges ahead of them in the field of engineering on campuses as well as in the work place.

Improving the engineering climate for women on college campuses is a varied and difficult task due to the many myths and prejudices perpetuated in the field. The most obvious myth, say Meinholdt and Murray, is that females are considered less competent than males in the skills required to pursue a career in engineering. These skills include visual-spatial perceptions, math abilities, interests and self-confidence. Meinholdt and Murray challenge these "women-focused explanations" by citing a meta-analysis examining the gender differences in math scores from 254 independent studies involving over 3 million subjects (Hype, Fennema, and Lammon, 1990). The results show that women consistently perform as well or better than men in computational skills and solving mathematical problems. Also, women appear to perform visualization tasks as well as men. Women's interest and attitudes regarding their abilities, however, have proven to be key issues in accounting for the low number of women in engineering careers. Generally speaking, according to a group of studies cited by Meiholdt and Murray, women in college judge themselves to be less able to succeed in engineering due to their socialization in high school.

Selected Interventions

Intervention methods suggested by Yauch counter this traditional high school socialization process. She urges high schools to offer more advanced math and science courses because they "create a larger pool of women that are prepared for an engineering major." In addition several on-campus strategies have emerged to help women complete their engineering degrees.

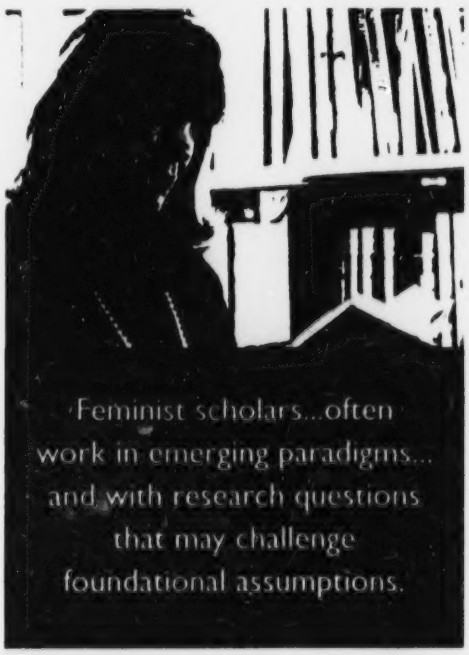
In 1995 the University of Wisconsin-Madison created the Women in Science and Engineering Residential Program (WISE-RP). This program enrolled 58 women its first year and houses about 90 students in a residence hall. The program's goal is to reduce the disproportionate loss of women from science and engineering majors. Studies have found that during the first two years of college many women planning to major in engineering change majors. Writing in the *Journal of Women and Minorities in Science and Engineering* (Vol. 5, No. 3), Caitlyn Allen, who researched and assessed the content and structure of the WISE-RP, cites a study that found that 48% of females compared to 66% of males graduate in their intended major. This variation is magnified in engineering departments where women make up only 26% of the student population. Research cited in *Women and Men of the Engineering Path* (U.S. Dept. of Education and The National Institute for Science Education) suggests that the reasons young women chose to leave engineering departments were based on what they want to do with their lives rather than intellectual reasons. WISE-RP responds to both the intellectual and personal needs of female students by allowing them to enroll in WISE sections of introductory science courses, in which residence hall neighbors take laboratory and discussion classes together. WISE students attend professional career development presentations and organized social events. The average grade point averages of WISE-RP participants were substantially higher than that of other freshman and self-destructive social behaviors were lower.

Another support system available on some campuses for women engineer majors is the sorority Phi Sigma Rho, founded in 1984 at Purdue University. Yauch, a member of the sorority, states that this is a social sorority for women in engineering and engineering technology, "designed to accommodate the rigors of the engineering curriculum while providing opportunities for a social network, community service activities and fun." Yauch feels that there is a tendency to segregate women engineers and Phi Sigma Rho supplies students with opportunities to socialize in the general environment of both the campus and the community rather that separating them in an already isolated field.

institutional change

Defining Women's Studies Scholarship

The National Women's Studies Association (NWSA) has developed and adopted a statement defining the broad range of scholarly and professional work for faculty in Women's Studies scholarship. "This is something new for us," says Marjorie Pryse, chair of the task force on faculty roles and rewards that drafted the statement and former NWSA president. "But we need a policy statement. By not defining Women's Studies, individual faculty members can suffer in tenure and promotion."


Feminist scholars...often work in emerging paradigms... and with research questions that may challenge foundational assumptions.

The aim of the NWSA statement is to articulate specific ways in which Women's Studies scholarship may be demonstrated and assessed for purposes of tenure and promotion of feminist faculty both within Women's Studies and in other disciplines. As the task force statement explains, "Feminist scholars in other disciplines often work in emerging paradigms for those disciplines and with research questions that may challenge foundational assumptions. Such scholars may affiliate with Women's Studies in order to expand their community of inquiry and their work often goes unrecognized by scholars outside of Women's Studies."

The task force's guidelines are meant "for scholarly recognition of feminist and women's studies scholarly and professional work that offer full and fair assessment of women's studies faculty across the departmental and disciplinary divisions that mark the terrain of higher education."

The guidelines for evaluating scholarship in Women's Studies are based on the Carnegie Foundation's conceptual framework of standards of scholarly work. These include:

- The Scholarship of Discovery: New Ways of Knowing,
- The Scholarship of Integration,
- The Scholarship of Application: Connections to Everyday Life and Social Studies, and
- The Scholarship of Teaching: Feminist Pedagogy.

According to the task force, this paradigm helps to define disciplinary work in Women's Studies because it expands what counts as research, understands transformative teaching as a form of scholarship, and views community and professional organizations as potential sites for the production of knowledge as well as for opportunities for service.

The task force goes on to provide a discussion of how Carnegie Foundation's paradigm can be applied to faculty work in Women's Studies. For example, in applying the scholarship of discovery element to Women's Studies, the task force describes Women's Studies as an intellectual field that has emerged from questions that researchers have either ignored or not thought to ask. "Often the failure or refusal to ask these questions eliminates women and girls from data sets, misses the significance of gender as a variable, or ignores women's contributions to history and culture. In addition, because similar gaps and inconsistencies result from the omission of questions concerning race, class, sexuality, and other features of social difference from research and art, the feminist scholarship of discovery encourages scholars, theorists, artists, and cultural interpreters to address a range of human differences and global issues in their work."

The NWSA statement grew out of the organization's participation in the National Project for Institutional Priorities and Faculty Rewards directed by Robert M. Diamond, former assistant vice chancellor of the Center for Instructional Development at Syracuse University and now director of The National Academy for Academic Leadership. A sub-project, "Developing Discipline-Specific Definitions of Faculty Work," examined nearly 30 disciplines that are not perceived in the academy as true disciplines.

"There were a number of disciplines that were running into problems," explains Diamond. "They are not perceived as true disciplines. They don't have long histories or journals, and their research is atypical." He wanted to especially work with the Women's Studies and Black Studies communities because "they were really getting beat up on."

Many times when search or promotion committees are discussing candidates in these atypical fields, the committee's discussion shifts from the candidate to the discipline. "They start arguing about whether the candidate's discipline is a true discipline," says Diamond. "It's not their call."

A document that lends "more institutional structure" to the field of Women's Studies, and clarifies the scholarship and foundations of the field, becomes crucial for Women's Studies' chairs and program directors when they request resources. "Women's Studies has come up against such limitations in institutional resources because people don't know what Women's Studies is about," says Pryse. And while it is beneficial to scholars both in and out of Women's Studies to define the field, Pryse reiterates the task force's message that the statement is not meant to "restrict the direction of further development" of the field.

"The key to all this is what happens on campuses," says Diamond. "This statement gives ammunition and direction for the next step. If we're going to change institutions, then the mission statements and the rewards for faculty should match."

The full statement, "Defining Women's Studies Scholarship," is available on the NWSA web site, www.nwsa.org/taskforce.htm

in brief

50-50

Internet use by women reached 50% in December 1999. From February to December 1999, the number of women online jumped 32%, outstripping the 20% pace of growth for men—Nielsen Media Research and NetRatings.

$96,500

is the top salary for a female CEO of a community college system. Male counterparts earn $110,192. Female CEO's of single institutions earn $80,000 while males earn $96,000—The National Profile of Community Colleges, 3rd edition.

53.5%

of female undergraduate faculty members are not tenured—Race and Ethnicity in the American Professoriate, 1995-96, HERI.

17,856

women received Ph.D.s in 1998, the highest one-year total ever—Doctorate Recipients from United States Universities: Summary Report 1998.

69%

of women returning to school value flexible scheduling of classes compared to 53% of men. Women also favor flexibility regarding the length of time needed to complete different programs (55% vs. 40%)—Gaining a Foothold, AAUW Educational Foundation.

3,242

women over 45 received doctorates in 1998—Doctorate Recipients from United States Universities: Summary Report 1998.

29 of 121

NASA astronauts and 3 of the 42 shuttle pilots are women—*Discover*.

1 in 3

chance of living 100 years. That's what people born after 2000 can expect according to *U.S. News and World Report*.

Stress Grows Among Freshmen Women

Levels of stress are nearly twice as large for women as they are for men entering college as freshmen according to *The American Freshman: National Norms for Fall 1999* published by the Higher Education Research Institute at the University of California, Los Angeles. Thirty-eight percent of women feel frequently overwhelmed compared to 20% of men.

The survey suggests that worry over finances may account for the increased stress level among women. More women than men are concerned that they may not have enough money to complete college (69.6% of women, compared to 57.2% of men). In addition, 44.1% of women find it very likely that they will need to get a job to pay for college expenses compared to 33.3% of men.

A second explanation for increased stress among women involves how men and women spend their time, the report states. Compared to men, women spend significantly more time studying, performing volunteer work, participating in student clubs/groups, and tending to housework or child-care responsibilities. Men, on the other hand, spend more of their time exercising or playing sports, watching television, partying, and playing video games. "These findings suggest that women spend time on goal-oriented and potentially stress-producing activities, whereas men more often participate in activities that provide a recreational outlet and possible release from stress," the report notes.

For more information on *The American Freshman* visit www.gseis.ucla.edu/heri/executive.htm

Gender-related Findings in The American Faculty Poll

Over 90% of respondents to *The American Faculty Poll*, a nationwide survey of college and university professors, say they are content with their career choices, but have great concern about tenure, teaching loads, student quality, the increasing use of part-time teachers and the lack of institutional support for scholarly work.

The survey of 1,500 full-time faculty members at two- and four-year institutions was conducted by the National Opinion Research Center at the University of Chicago and was sponsored by TIAA-CREF, the financial services organization that provides retirement services to U.S. colleges, universities, and related education and research organizations.

The American Faculty Poll contains a wealth of information on how each gender views a myriad of job-related issues. Of those responding to the faculty survey, 65% were male and nearly 35% were female. According to the survey, men, faculty members at two-year institutions, and minority faculty members are more likely than their respective counterparts to indicate they would again choose a career in higher education. Sixty-five percent of males and 58.8% of females said they would definitely pursue an academic career again. A higher proportion of males than females teach a mix of undergraduate and graduate/professional students, "partly because men are more likely to be faculty members at a four-year public institution and women are more likely to be at a two-year college," the report states. Eighty-five percent of female faculty members list teaching as their principal activity while 75% of their male counterparts do.

The report found that women are somewhat more likely than men (36% vs. 29%) to have been at only one institution for their entire career. Faculty members were split into thirds with regard to the number of years they have held full-time teaching appointments, using the categories of 0-10 years, 11-20 years, and more than 20 years. Women and ethnic minorities reported fewer numbers of years in teaching and research which, according to the report, reflects their relative youth and more recent increase in faculty positions in higher education.

When asked to rate 17 factors that contribute to job satisfaction, including the opportunity to educate students, working in an intellectually challenging environment, teaching courses that interest you, and time for family, female faculty members were found to feel more strongly than their male counterparts about the factors since they proportionately attached more ratings of "very important" to each factor. One of the lowest levels of satisfaction reported across any subpopulation came from female faculty members with regard to their perceived opportunities for

professional recognition, only 9% said they were "very satisfied" in this area.

An attractive salary and benefits package was found to be more important for women and racial/ethnic minorities than for men and whites. Job security was also found to be "relatively more important" for female faculty members than for their male counterparts. Flexible work schedules also rated higher among women (68%) than men (55%).

Copies of *The American Faculty Poll* are available from TIAA-CREF at 212/490-9000, ext. 2759 or email vcphua@tiaa-cref.org.

Slow Progress in Top Policy Spots

The appointments gap is narrowing between women and men selected by governors to serve as top-ranking policy leaders, according to the annual report *Appointed Policy Makers in State Government*, compiled by the University of Albany's Center for Women in Government. In 1999, 70% of policy leaders were men, while nearly 30% were women. In 1997, men accounted for nearly 72% of policy leaders and women just over 28%.

The report states that the percentage of women department heads in governors' offices rose from 23.7% in 1997 to nearly 25.8% in 1999, while top advisors to governors dropped during that period from 39.7% to just 38.9%.

The study found that governors continue to appoint women as heads of public bureaucracies in fields where women leaders have traditionally been concentrated. For instance, women appointees hold 66% of leadership positions in civil and human rights, 37% in labor and human resources, 37% in health, 36% in welfare and employment security, and 26% in education.

Copies of *Appointed Policy Makers in State Government* are available from the Center for Women in Government 518/442-3883.

Salary Survey Available

Make sure you're receiving competitive pay for your position. The College and University Personnel Association's 1999-2000 Mid-Level Administrative/Professional Salary Survey and the Administrative Compensation Survey are available. The overall median salary increase for all mid-level administrative/professional job categories is 4.2%. Those at two-year institutions saw just a 2.8% increase.

According to the Administrative Compensation Survey, which looks at executive /administrative positions, the overall median salary increase for these job types is 5%.

For information on the reports visit the CUPA web site, www.cupa.org

Grand Valley State University Wins Equity Award

Grand Valley State University has earned the 12th annual Progress in Equity Award (PIE) from the American Association of University Women Legal Advocacy Fund for the university's pioneering study aimed at improving gender equity.

The Women's Climate Study heightened awareness of women's issues and provided a springboard for launching a number of programs contributing to women's equity at Grand Valley State. "The PIE award was created to recognize a university program that has resulted in significant progress toward equity for women on campus and there is no question that Grand Valley State meets and exceeds these standards," said LAF President Sylvia Newman in a statement. "The Women's Climate Study provides an excellent model for what campuses nationwide can do to improve conditions for women."

The Women's Climate Study examined a wide range of issues such as salary equity, opportunities for advancement, classroom climate, childcare, sexual harassment, extra-curricular activities, Women's Studies, advising, and mentoring. The survey involved faculty, staff, and a large sample of both male and female students. It was first conducted in 1993-94 and will be administered every five years to update the progress made.

Continued from page 1

addressing long-term care needs, and a system of adequate Medicare and Social Security that we can be sure will be there when we need them."[3]

The above recommendations focus on what individuals can do to improve their experience as they age. Because questions and issues associated with aging will only increase as we move into the 21st century, the academy, too, can benefit from its own audit of aging. Key areas to examine include: pay—to ensure that pay gaps continue to narrow and that women's starting salaries are competitive with men's; work schedules that offer flex-time for caregiving; and physical fitness incentives for employees as well as students.

Confronting and taking the time to understand and experience the nuances of aging can provide a new perspective on life for young and old alike. But individuals and institutions must be willing to examine the issue straight on.

Notes

1. TIAA-CREF, Research Dialogues, "Women and Retirement," October, 1999.
2. Ibid.
3. Reprinted with permission from the *Women And Aging Letter*, National Center on Women and Aging, Brandeis University. www.brandeis.edu/heller/national/ind.html

Correction

In *OCWW* Fall 1999, the "For Your Bookshelf" section incorrectly listed the authors of one of the readings. The citation should have read:

Rayman, Paula and Belle Brett. *Pathways for Women in the Sciences: The Wellesley Report, Part I*. Wellesley Centers for Women Publications, 1993.

for your bookshelf

Humanities

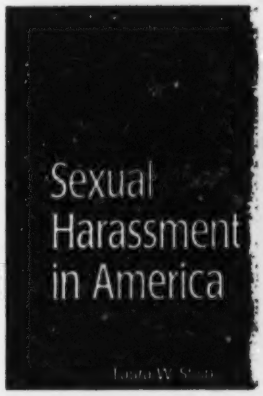
Critical Passions: Selected Essays by Jean Franco, edited by Mary Louis Pratt and Kathleen Newman (Duke University Press, 1999). This wide-ranging collection of essays demonstrates influential theorist and cultural critic Jean Franco's ability to survey and critique, through reflection and scholarly analysis, a multitude of media, whether subway graffiti, a fashion manual, Latin American literature, or films of tribal societies. In the selected essays, Franco, most recognized for her feminist critique of Latin American writing over the last 30 years, touches on history, identity, cultural politics, and the study of globality, from a political perspective that remains focused on social justice. $22.95, paper. (Duke University Press, Box 90660, Furham, NC 27708; www.duke.edu/web/dupress).

The Alphabet in My Hands: A Writing Life, by Marjorie Agosin (Rutgers University Press, 2000). Agosin, who spent her childhood and adolescence with her Jewish family in Chile, recounts the events that forced her family to leave Chile during the overthrow of Salvador Allende by General Pinochet and immigrate to Athens, Georgia. Agosin is an award-winning poet who fuses poetic imagery with a narrative of her life as a blond "non-white" immigrant in a foreign land. This deeply personal memoir reflects the dual and displaced nature of coming of age in two cultures where "home" is both remembered and recreated. $24.00, cloth. (Rutgers University Press, 100 Joyce Kilmer Ave., Piscataway, NJ 088854-8099; rutgerspress.rutgers.edu).

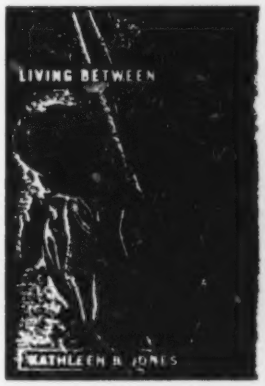
Migrant Daughter: Coming of Age as a Mexican American Woman, by Frances Esquibel Tywoniak and Mario T. Garcia (University of California Press, 2000). Frances Esquibel Tywoniak's life story, told by Mario Garcia, is a dazzling portrayal of how one woman negotiated her racial identity and cultural allegiances. Tywoniak was born in Spanish-speaking New Mexico, moved with her family to California during the depression to attend school and work as a farm laborer, and later won a university scholarship to attend the University of California, Berkeley. This personal memoir outlines how Tywoniak came to find education as a means of breaking with fieldwork patterns of life, and the effects of migration on family. $17.95, paper. (University of California Press, Berkeley, CA 94720).

Significant Contemporary American Feminists: A Biographical Sourcebook, edited by Jennifer Scanlon (Greenwood Press, 1999). This text is an excellent collection of analytical, biographical, and bibliographical portraits of 50 influential U.S. feminists. These women, including Rita Mae Brown, Angela Davis, Susan Flaudi, and Dolores Huerta, have served as catalysts in the developing feminist movement. Their stories provide personal and political accounts of the range of motivations, activities, and accomplishments of feminist thinkers. This text is wonderful source book for any women-centered course. $79.95, cloth. (Greenwood Press, 88 Post Road West, Westport, CT 06881).

Social Sciences

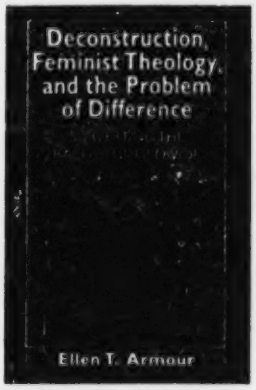


Sexual Harassment in America: A Documentary History by Laura W. Stein (Greenwood Press, 1999). Stein explores the many definitions and manifestations of sexual harassment and our responses, legally and personally, to it. There are over 90 documents in this text, which collectively define the unique political and social aspects of sexual harassment. An explanatory introduction helps students of all disciplines understand how each particular situation correlates with contemporary trends (e.g., same-sex harassment) and historical developments (e.g., free speech issues). $49.95, cloth. (Greenwood Press, 88 Post Road West, Westport, CT 06881).



Living Between Danger and Love: The Limits of Choice by Kathleen B. Jones (Rutgers University Press, 2000). Combining memoir with autobiography, Jones recounts vivid episodes of domestic violence which parallel the tragic life of Andrea O'Donnel, a student of Jones' who was killed by her boyfriend in 1994. What emerges is a compelling and complex account of modern feminism's unfinished work and the difficult choices that must be made when love and power are in conflict. Through the death of O'Donnel, a self-assured and strong-willed feminist, Jones delin-

eates that domestic violence is a painful reality that can happen to anyone. $26.00, cloth. (Rutgers University Press, 100 Joyce Kilmer Avenue, Piscataway, NJ 08854; rutgerspress.rutgers.edu).



Deconstruction, Feminist Theology, and the Problem of Difference: Subverting the Race/Gender Divide by Ellen T. Armour (The University of Chicago, 1999). In this text, Armour forges an alliance between deconstruction and feminist theology by demonstrating the usefulness of deconstruction for feminism's trouble with race. Armour asserts that white is a color and that race should not be constitutive of who we are. She challenges the conventional assumptions of Derrida and Irigaray by placing race at the center of the discussion of sexual difference. $18.00, paper. (The University of Chicago Press, 11030 South Langley Avenue, Chicago, IL 60628; www.press.uchicago.edu).

Neither Separate nor Equal: Women, Race, and Class in the South, edited by Barbara Ellen Smith (Temple University Press, 1999). Smith has compiled personal and theoretical essays by well-known scholars on the South and Appalachia such as Mab Segrest, Monica Kelly Appleby, and Sally Ward Maggard. This collection of essays focuses on topics such as the dilemmas of regionalism, relationships between black domestic workers and white employees, Latinas in the South and community-building in the Appalachia, approaching differences of race and class as social relations rather than forms of separation. Unifying around a theme of relationality, this text offers searching empirical studies of Southern women living in an increasingly global society and is a conceptual model for feminist scholarship as a whole. $19.95, paper. (Temple University Press, Philadelphia, PA 19122; www.temple.edu/tempress).

Weaving Work and Motherhood, by Anita Ilta Garey (Temple University Press, 1999). Garey's study points to social solutions that are needed to address how to integrate daily family life with labor force participation. Garey dispels the myth that women choose between employment and family by drawing on interviews with women with children employed by hospitals. This study details the lives and experiences of working mothers, in female-dominated occupations and part-time positions, who are committed to their work and their families. This book inaugurates a powerful framework for future research in family studies. $19.95, paper. (Temple University Press, Philadelphia, PA 19122; www.temple.edu/tempress).

All Our Relations: Native Struggles for Land and Life, by Winona Laduke (South End Press, 1999). Environmental activist Winona LaDuke delineates the struggle for survival, community, and self-determination of Native Americans. She outlines a direct relationship between the loss of cultural diversity and the loss of biodiversity. The lands of Native peoples are subject to some of the most invasive industrial interventions, according to Laduke, ranging from toxic wastes to clearcuts. LaDuke's final analysis is fundamentally about the collective survival of all human beings and the recognition of the depth of spirit and commitment to all our relations, and the work to protect and recover them. $16.00, paper. (South End Press: 7 Brookline Street #1, Cambridge, MA 02139; www.lbbs.org/sep/sep.htm).

Science and Technology

Women in Science and Engineering: Choices for Success, edited by Cecily Cannan Selby (The New York Academy of Sciences, 1999). This digest of conference papers from "Choices and Successes: Women in Science and Engineering 1998" focuses on a range of issues regarding young women scientists and engineers who want and need to do more than fit into preestablished patriarchal systems. The intention of the conference was to not only help women adapt to current departmental standards, but also to identify how these systems can and should improve so that women, and others with diverse backgrounds, will choose to work within them. (Annals of the New York Academy of Sciences, Volume 869, www.nyas.org).

Kindred Nature: Victorian and Edwardian Women Embrace the Living World, by Barbara T. Gates (The University of Chicago Press, 1998). In this inventive analysis, Gates outlines women's relationship to natural history and science between the 1830s and the end of World War I. Representing the work of women scientists, technicians, collectors, naturalists, animal rights crusaders, storytellers, and visionaries, Gates demonstrates the originality of their work and the ways in which science excluded them. $20.00, paper. (The University of Chicago Press, 5801 South Ellis Avenue, Chicago, IL 60637; www.press.uchicago.edu).

technology

Creating a "Tech-Savvy" Community

Women and girls are not pursuing high-tech careers due to their disenchantment with the ways Computer Science is taught, not due to computer phobia according to "Tech-Savvy: Educating Girls in the New Computer Age," a new report from the American Association of University Women (AAUW) Educational Foundation. "Tech-Savvy," which emerged from the Foundation's two-year Commission on Technology, Gender, and Teacher Education, draws on results of an online survey of 900 teachers, and qualitative research with over 70 girls concerning their views of the emerging computer culture.

A key theme of the report relates to girls' reservations about the computer culture. Girls are concerned about the passivity of their interactions with the computer as a tool; they reject the violence, redundancy, and tedium of computer games; and they dislike narrowly and technically focused programming classes. "Too often, these concerns are dismissed as symptoms of anxiety or incompetence that will diminish once girls 'catch up' with the technology," according to the report. The authors suggest that "the computer culture would do well to catch up with the girls. . . .who are pointing to important deficits in the technology and the culture in which it is embedded."

To improve the computer science literacy climate, the commission recommends schools:

- **Compute across the curriculum.** Computation should be integrated into such subject areas and disciplines as art, music, and literature, as well, as engineering and science.
- **Redefine computer literacy.** Students must be educated to move beyond word processing and presentation software to solve real-life problems with technology.
- **Respect multiple points of entry.** Students encounter different entry points into computing. These should be encouraged while remaining sensitive to activities and perspectives that appeal to girls and young women.
- **Change the public face of computing.** Make the public face of women in computing correspond to the reality rather than the stereotype. Girls tend to imagine that computer professionals live in a solitary, anti-social, and sedentary world. This is an alienating and incorrect perception of careers that will rely heavily on computer technology and expertise in this century.
- **Prepare tech-savvy teachers.** As early as possible in a teacher's education, they should learn how to design curricula that incorporate technology in a way that includes all students. The focus of professional development must shift from mastery of hardware to design of classroom materials, curricula, and teaching styles that complement computer technology.
- **Begin a discussion on equity for educational stakeholders.** A more equitable and inclusive computer culture depends on consciousness-raising within schools about issues of gender, race, and class. School districts should put in place institutional mechanisms that will facilitate such conversations in partnership with parents, community leaders, and representatives from the computer and software industry.
- **Educate students about technology and the future of work.** In the future, all jobs, including those in the arts, medicine, law, design, literature, and the helping professions, will involve more computing. Conversely, technological careers will increasingly draw on the humanities, social sciences, and "people skills." It is especially important that girls not bound immediately for college understand career options in computer and network support.
- **Rethink educational software and computer games.** These activities too often show gender bias. Software should speak to girls' interests and they should be treated as early as possible as designers, rather than mere end users, of software and games.
- **Support efforts that give girls and women a boost into the pipeline.** Create and support computing clubs and summer school classes for girls, mentoring programs, science fairs, and other programs that encourage girls to see

Continued on page 16

women @ technology

on the web

www.ehr.nsf.gov/EHR/DUE/programs/ate/ate.htm
Advanced Technological Education program provides grants to strengthen education in biotechnology, environmental technology, information technology, manufacturing, and other related disciplines.

www.ehr.nsf.gov/EHR/DUE/programs/csems/csems.htm
The Computer Science, Engineering, and Mathematics Scholarship program funds institutions to provide scholarships for low-income students in computer science, computer technology, engineering, engineering technology, and mathematics.

www.ctcnet.org
The Community Technology Center is part of an educational campaign to help young people become more aware of the role technology plays in a variety of professions. Volunteers may be asked to participate in after-school programs, online conversations, or to write newsletter articles or meet with students one-on-one.

www.catalystwomen.org
Provides statistics on women holding top corporate jobs.

www.aoa.gov
Statistics and information from the federal government's Administration on Aging.

www.aarp.org
The research and reference section of the American Association of Retired Persons contains complete studies of Baby Boomer retirement savings patterns and expectations. The site also includes financial guides for women as they consider retirement.

resource update

Calls for Papers

Meridians, a feminist interdisciplinary journal, seeks submissions for publication this year. The goal of the journal is to create a forum for the finest scholarship and creative work by and about women of color in a U.S. and international context. For more information visit www.smith.edu/meridians or send an email to Meridians@smith.edu

The Journal of Women and Minorities in Science and Engineering encourages submissions of original, peer-reviewed papers that report innovative ideas and programs, as well as scientific studies of underrepresented groups in science and engineering fields. For details contact the Editorial Assistant at the Center of Interdisciplinary Studies, Virginia Polytechnic Institute and State University, 540/231-6296.

Film and Women's Studies: Multiple Intersections, a special thematic issue of *Women's Studies Quarterly* edited by Wendy Kolmar, seeks submissions that direct attention to the multiple connections between film and Women's Studies. The issue will be published in spring/summer 2002. Topics include: the uses of film in the teaching of women's studies and the uses of Women's Studies in the teaching of film; documentary and ethnographic film as feminist scholarship; film as a reflection of and/or participant in the cultural processes of gender construction; and film as an alternative mode for exploring the insights of feminist theory. Essays by film practitioners or interviews with filmmakers on these issues are particularly welcome.

The submission deadline is July 15, 2000. Contributions should be no longer than 20 double-spaced pages (including notes). Submit a disk and three hard copies of essays to Wendy Kolmar, Women's Studies Program, Drew University, Madison, NJ 07940.

Conferences

Making a Difference Leading with Energy, Passion, and Integrity, sponsored by the National Institute for Leadership Development, Marriott's Camelback Inn Resort, Golf Club & Spa, Scottsdale, Ariz., June 15-17, 2000. Jacqueline Woods, Stephen Mittelstet, and Pamela Tate are featured speakers. Topics include "The Future of Money: Where to Find It," "What We Can Learn from Our Mighty Foremothers in Education," and Women Leaders in Community Colleges." For more information contact the NILD, 602/285-7494.

Agents of Social Change: Celebrating Women's Progressive Activism Across the Twentieth Century, sponsored by The Sophia Smith Collection, Smith College, September 22-23, 2000. The conference marks the opening for research of eight major manuscript collections of women activists. Papers include those of Dorothy Kenyon; Jessie Lloyd O'Connor; Mary Metlay Kaufman; Constance Baker Motley; Gloria Steinem; Frances Fox Piven; the Women's Action Alliance, a national anti-sexism clearinghouse and advocacy group; and the National Congress of Neighborhood Women, a support network for grassroots organizers of poor and working-class women.

Scholars in search of research topics are especially encouraged to attend. There are a few graduate student travel stipends available. To receive more information and registration materials, contact conference coordinator Joyce Follet at jfollet@ais.smith.edu

The Future of Women's Studies: Foundations, Interrogations, Politics, University of Arizona, Tucson, October 20-21, 2000. Plenary sessions will address the kinds of scholarship, teaching, and activism, that mark the field of Women's Studies today; whether Women's Studies is a discipline and what models of academic programs exist across the country; and the possibilities of sustaining the field's historical links to activism as programs develop into departments and take on graduate education. For details visit w3.Arizona.edu/~ws/

International Perspectives: The Political, Social, and Economic Impact of Education for Women and Girls, sponsored by the AAUW Educational Foundation, Wyndham Hotel, Washington, D.C., Nov. 17-18, 2000. The symposium's goal is to initiate and international dialogue on how women create change in their communities. For details visit www.aauw.org/7000/ef

Taking Nature Seriously: Citizens, Science, and Environment, sponsored by the Oregon Humanities Center, the Center for the Study of Women in Society, the University of Oregon Environmental Studies Program, College of Arts and Sciences, and the Departments of Biology, English, and Philosophy, February 25-27, 2001, is designed to promote dialogue between the interdisciplinary fields of science studies (history, philosophy, sociology, literature, cultural studies) and environmental studies (biological and natural sciences, social sciences, humanities, management, policy, design, and law), as well as between academic research and public activism. Keynote speakers include: Donna Haraway, Richard Lewontin, and Andrew Pickering. For more information contact conference coordinator Lynne Fessenden, tns@darkwing.uoregon.edu or visit darkwing.uoregon.edu/~tns

Resources

The **WISE Best Practices Guidebook on Mentoring Programs** is available from the Committee on Institutional Cooperation (CIC) Women in Science and Engineering (WISE) Initiative. The guide is based on the Best Practices Workshop held in May 1999 at the University of Wisconsin-Madison. Paper copies can be obtained from the CIC, 217/244-5565. This volume as well as two previous volumes, *The Classroom* and *Undergraduate Research and Living-Learning Programs*, can also be found on the CIC web site www.cic.uiuc.edu/wise/wiseintr.html

Third Wave Foundation offers $1,000 to $5,000 grants to challenge sexism, racism, homophobia, economic injustice, and other forms of oppression including projects that complement the foundation's three focus areas: reproductive rights, scholarships, and micro-enterprise. Deadline is November 1, 2000. Contact Third Wave, 116 East 16th Street, 7th Floor, New York, NY 10003; 212/388-1898; ThirdWaveF@aol.com

Continued from page 3

Theology in Chicago, Ill., to obtain a master of divinity degree. Her husband is pursuing a Ph.D.

"The hardest thing is deciding you want to do it [go back to school]," says DeVries. "You really want to do this for yourself because it's unfinished business that you need to do to move on."

Notes

1. Phillippe, Kent A., and Madeline Patton. 1999. *National Profile of Community Colleges: Trends & Statistics.* 3rd Edition. Washington, D.C.: Community College Press, American Association of Community Colleges.

Continued from page 14

themselves as capable of careers in technology.

But how can the education community measure success of these efforts? Simply getting more girls into computer science isn't the answer writes AAUW Educational Foundation President Sharon Schuster in the report's Foreword. "Success is a commitment to lifelong technology learning, with all that implies: an ability to adapt to rapid changes, interpret critically the wealth of electronic information, experiment without fear, and assume a variety of roles beyond that of end user or consumer."

Copies of the "Tech-Savvy" report are available at www.aauw.org.

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Sponsored by the Program on the Status and Education of Women, AAC&U.

About AAC&U

AAC&U is the leading national association devoted to advancing and strengthening liberal learning for all students, regardless of academic specialization or intended career. AAC&U is committed to making the aims of liberal learning a vigorous and constant influence on institutional purpose and educational practice in higher education.

On Campus With Women is the quarterly newsletter of AAC&U's Program on the Status and Education of Women (PSEW). With a quarter century of national leadership, PSEW is one of only two women's offices sponsored by a higher education association. PSEW's current priorities are curriculum and campus climate, promoting women's leadership, and disseminating new research on women and gender.

on campus with women
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on women

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Director PSEW Caryn McTighe Musil

Executive Editor Debra Humphreys

Editor Susan Reiss

Vice President for Communications Joann Stevens

Production Editor Ann Kammerer

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Connecting Women and Technology

With stealth and swiftness, information technology has transformed our lives. We now depend on a massive virtual database to provide answers to nearly any question in any category. Need to find the latest research on heart disease? Search the Internet. Want to book hotels and flights for an upcoming trip? Visit a couple of online travel sites. Aptly named the World Wide Web, this technology has drawn us in, made a comfortable spot for us to light, and then ensnared us through its global reach.

But the Web's impact reaches beyond the information it provides. It is molding how we receive and transmit information, not only on the Internet, but also through cell phones, hand-held computers, and other related devices. Information technology, the backbone of the Internet, is recasting economies, as well as political frameworks.

For all of its power, information technology is experiencing a rush of loose ends because the rules are not yet clear, and the regulatory environment still unsettled. "This is the first point in history that women can have a direct, visible, and powerful effect on the way we're going to design the society of the future," said Jane Fountain, professor of public policy at the John F. Kennedy School of Government at Harvard University, and a panelist for "Women Shaping the Future through Technology and Innovation," a National Council for Research on Women (NCRW) event held in December 1999. "We need to move quickly and powerfully."

Fountain asserts information technology is dominated by a militaristic view, largely due to information technology's roots. To stem the shortage of U.S. technology workers, Fountain offered a radical proposal. Change the education system, training, and employment practices so that 50% of the population is more technically oriented. "We need to do this instead of teaching them how to make beds in hotels and painting fingernails," she said.

It is also a myth that information technology is gender neutral. "People doing this [creating technology] come from a small slice of the population. It is incredibly important to make this visible. What we are getting is only a tiny portion of what we could get," argued Anita Borg, founder of the Institute for Women in Technology and a panelist at the NCRW meeting. "If we take the opportunity to realize the potential this technology has, we can enhance and connect all of the things we're trying to do for women."

Women account for half of the Web audience and are signing on in greater numbers than men. But the percentage of women actually designing and developing information technology by earning a bachelor's degree in computer science hovers just above 15%. And here lies the heart of the matter.

These women are holding early computer processors conceived and built to address U.S. Army needs. U.S. Army photo.

The barriers to women's full participation extend to the deepest and most basic questions about gender. Society must confront lingering stereotypes such as, "Women don't belong in science." Probing questions such as who should do what work and who belongs in what fields need to be addressed. Comparative research must be done showing the outcomes of cultures in which 50% of the engineering workforce are women. We must also change how we conceptualize information technology. "It is seen as hyper rational, highly linear, and almost militaristic," said Fountain. "It doesn't have to be done this way."

Just over 20 years ago when women were heading into the new field of computer science, no pervasive stereotype existed as to what the field was. "It was wide open," said Borg. "There was no assumption that this isn't a place for me. Young women didn't feel they were already behind. Today the situation is reversed."

While increasing the numbers of women and girls involved in the design and development of information technology is critical, a deeper issue that must be addressed to create a truly inclusive arena is how we think about the technology. "We must change the discourse," said Fountain.

This issue of *On Campus With Women* focuses primarily on information technology and the impact that women have on this field. In future issues watch for more articles on this topic including a discussion on the new report from the congressionally mandated Commission on the Advancement of Women and Minorities in Science.

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Improving the Information Technology Climate for Women

The U.S. Bureau of Labor Statistics has projected that between 1994 and 2005, the field of information technology (IT) will need more than 1 million new workers. The U.S. Department of Commerce's Office of Technology Policy has identified a significant workforce shortage in this field.

After a peak of 42,000 computer science bachelor's degrees awarded in the mid-1980s, the numbers of degrees awarded to both men and women dropped off, but stabilized around 25,000 in the mid-1990s. Master's degree production has increased since the 1970s, but since the early 1990s, the numbers have remained constant between 9,000 and 10,000. Doctoral production increased in the early 1980s, but again since the mid-1990s growth has leveled off.

Gender demographics of IT graduates suggest that women are woefully underrepresented. Women earn just 15% of bachelor's degrees in computer science. Figures are even more disturbing in IT. Overall, the percentage of women earning undergraduate degrees in information technology is about 7%.

"The numbers are low and are decreasing," says Jane Fountain, associate professor of public policy at the John F. Kennedy School of Government at Harvard University. "We're failing to attract women and losing the ones we have. This is also true of men." The reason for the defections: dot coms and stock options are more captivating than spending four years hitting the books. According to Fountain, 38% of women and 20% of men transfer out of computer science programs because of concerns over the lifestyle that information technology requires. The most likely time for a woman to drop out of a program is when she elects her major or right after she declares.

The IT culture characterized by 60-hour work weeks on average and a trend toward hiring temporary workers rather than full-time workers does little to attract women. "Women perceive a career in the field as socially isolating and one that would be difficult to balance with life," explains Fountain. "The business is extremely intense and demanding often requiring people to work through the night." To counter these downsides, Fountain notes that women who choose to stay in the field often work as contract labor or start their own firms so that they can control the number of hours worked. For entrepreneurs the difficulty comes when trying to raise venture capital and other financial backing. "A lot of women think of IT as a meritocracy, if they are technically adept they can get ahead," says Fountain, but financial backers, intent on betting on the person rather than the business, often view women as less aggressive and therefore a bad risk.

According to Allan Fisher, a professor of computer science at Carnegie Mellon University, while girls and women may be using the Internet for communication and the web for information retrieval, it is predominantly men who are programming the computers, designing and fixing the systems, and inventing the technology that will affect all aspects of our lives. "The under-representation of women among the creators of information technology has serious consequences, not only for those women whose potential goes unrealized, but also for a society increasingly shaped by that technology," says Fisher.

Fountain argues that the structure of the computer science curriculum is a problem for women. "Most computer science and engineering programs begin with weeding out courses. These are very difficult for women. They go from situations where they had lots of attention in high school to college courses where large percentages of women are expected to drop the course," says Fountain. "Women think, 'I'm not good in this field.' What we need to do is prepare women in advance for these feelings and let them know that they will feel like they want to leave their major and then work with them and with faculty to ensure they make a smooth transition."

A Call to Action

By examining other disciplines that have been successful in increasing women's representation such as medicine, law, and chemistry, NSF workshop participants felt IT could better identify the barriers specific to IT and devise solutions that lessen these barriers. An eight-point "Call to Action" for IT departments was developed to improve the environment for all students and to have a greater effect on the experiences of women. The "Call to Action" suggests:

1. Departments should adapt to widely varying levels of experience among incoming students.
2. Curricula should be designed to demonstrate the relevance of the technology to real-world, social issues.
3. Students should be provided with sound career information early on.
4. Departments should control teaching quality.
5. Students should be mentored.
6. Departments should look at statistics and should work with students to help understand and prioritize their needs.
7. Departments should increase recruitment efforts in order to balance the initial gender composition of students.
8. External groups such as funding agencies, professional societies, and accrediting agencies should provide support and pressure that encourage faculty to mentor and to make appropriate pedagogical changes.

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Some Solutions

To identify ways to improve the climate for women in IT and to increase their numbers, the National Science Foundation funded a virtual workshop, Research Foundations for Improving the Representation of Women in the Information Technology Workforce in the fall of 1999. The workshop itself was unique in that it was conducted entirely over the World Wide Web. Just over 230 participants registered.

Topics considered were:

- Childhood to pre-college issues such as culture, socialization of young girls, peer pressure, media portrayals, computer games, church and role models, and curriculum issues.
- Higher education issues such as the uniqueness of IT classroom cultures and research settings and their impact on recruiting and retaining women.
- Workplace issues involving factors affecting women's interest in entering the IT workplace, characteristics of IT, and the comparison of IT disciplines with other scientific disciplines.
- Academic paths to IT including the impact of pedagogies and non-computer science major paths to the IT workforce, opportunities, and finances.
- Career paths in IT including the impact of career-specific opportunities, training, and mentoring.
- Professional organizations and their importance in education, mentoring, and training.

A number of factors inhibiting retention of female students in IT fields include: lack of same-sex role models, isolation, peers, a relative lack of computer experience, and the lack of social relevance in curricula. While much more research is needed to find out why women leave IT fields, workshop participants also called for ways to remedy the situation. Critical to solving the recruitment and retention challenge is identifying "best practices" and deploying strategies that can be disseminated on a national level.

More Data Needed

Little information is available to assess the climate for female faculty in IT-related disciplines. According to the workshop report, little is known beyond the percentages of women at each of the faculty ranks for Computer Science and Engineering Departments at doctoral granting institutions. "Reliable data on faculty retention and promotion rates by gender are not available; neither is relevant 'exit information' that might account for the perceived higher attrition rates among female faculty," the report states. Workshop participants stress the need for qualitative and quantitative data about the status of women in IT-related fields in higher education.

Overall, workshop participants stress the importance of making IT more enticing—to counter claims that IT disciplines are boring and lacking in creativity. In addition, more research is needed to identify ways to attract students to IT fields from non-IT disciplines. And finally, because very little research has been done in two-year college environments, more studies on the impact two-year institutions have on the recruitment and retention of women in IT are needed.

Because of the IT worker shortage and the "alarming decreases" of women in computer science today, academia is feeling the impact of the problems industry faces. "It behooves NSF to undertake studies that focus on women in IT companies and attempt to influence IT companies to make changes in their policies that will attract and retain more women," the report states. "We realize these changes will not be easy since most IT companies do not keep the gender statistics that would be ideal for such studies. . . .Companies must be approached individually and human

Continued on page 16

Bright Spots for Women's Recruitment in IT

The NSF Research Foundations for Improving the Representation of Women in the Information Technology Workforce Workshop cites a number of institutions for their innovative programs to attract and retain women. One example is Integrated Science and Technology offered at James Madison University. During the first two years, students take a variety of basic science courses, including an introductory computing course that involves programming using Visual Basic. During the last two years, students specialize in one concentration area—biotechnology, environment, energy, manufacturing, IT, and telecommunications. Over 50% of the students in the program are female.

Beyond the report other programs aimed at changing how computer science is taught are making inroads in retaining young women. Massachusetts Institute of Technology professor Lynn Stein, for example, through an NSF pilot project, offers an alternative way to teach computer programming. Rather than the traditional linear approach, Stein uses JAVA, an associational programming language, and a team-based focus.

At Carnegie Mellon University for the past five years, Allen Fisher and colleagues have engaged in an interdisciplinary program of research and action in response to this situation. The research effort has been to understand male and female students' engagement—attachment, persistence, and detachment—with computer science, with a special focus on the gender imbalance in the field. Students in the study have been interviewed once per semester about their family and schooling history, experiences with computing, feelings and attitudes about studying computer science. The goal of the action component has been to devise and effect changes in curriculum, pedagogy, and culture that will encourage the broadest possible participation in the computing enterprise. As a result of their efforts, the entering enrollment of women in the undergraduate Computer Science program at Carnegie Mellon rose from 8% in 1995 to 37% in 1999.

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Focus on Technology

Technology, Gender, and the Future of Library Science

The infusion of high-tech devices and techniques into library science began in the late 1970s when librarians started running online searches and using computerized tracking schemes. Today, digital publishing, archive administration, multimedia specialties, information resource management, and human-computer interaction are just a few of the areas those in library science must master.

The news for gender equity in salaries in this rapidly changing field is mixed. In some positions, men's salaries exceed women's, but in others, women have the economic edge. Starting salaries for library/information science graduates overall are rising. In 1997, a new graduate could expect to make just over $30,000. But according to a study by Vicki Gregory and Kathleen de la Pena McCook, there is still no discernible narrowing of the gender gap for salaries: male graduates in 1996 earned a median salary of $500 more than females. However, for women working as special librarians 1999 was the first year ever that they reached parity in pay with their male colleagues.

For 1998-99, the Association of Research Libraries reported that women's average salaries exceeded men's in some areas while falling behind in others. Overall, the median salary for women was $48,430 while the men received $51,696. The survey also showed that women directors were paid on average $124,176, while men were paid about $4,000 less. The median full-time salary of female Special Libraries Association members hit $49,550, while those for male members hovered just over $48,600.

In a discipline traditionally dominated by women, what impact has information technology had on gender relations within the field? While men historically have held leadership positions, women have filled the rank and file jobs. Between 1870 and 1930, "men were widely believed to have managerial talents that women lacked and this belief was used to justify favored placement of men. Many women shared the common stereotypes and felt that men were needed at the top for the good of the profession," according to Suzanne Hildenbrand author of "The Information Age versus Gender Equity: Techology and Values in Education for Library and Information Science" (Library Trends, Spring 1999).

Hildenbrand argues that while structural changes in library education were presented as reforms that would benefit the entire profession, they actually increased gender stratification. Between 1929 and 1942, for instance, the Carnegie Corporation awarded fellowships to train library management that went primarily to men. "In reviewing the history," writes Hildenbrand, "one is struck by how diligently this gender hierarchy was constructed. . . . The establishment of library programs in great universities certainly seems like an advance for the profession yet, with gender favored over merit, it clearly masked privilege for the few." So while women found employment as librarians over the years and their numbers grew, they still had difficulty pursuing top library positions.

Fastforward to the year 2000. How has the reliance on technology improved the position of women in library science? Hildenbrand suggests that it is unclear what impact today's library education programs will have on improving women's positions. She quotes a recent study by R.A. Corbin at San Jose State University that indicates that men are disproportionately employed as computer specialists and in higher levels of library computer administration and, therefore, make more money. The same study shows a slight and growing improvement for women.

"Information technology is library science for boys," says Sr. Anita Talar, a librarian and professor at Seton Hall University, ranked as one of the most wired universities in the U.S. "When library schools started putting 'information technology' in their names, more men were attracted at all levels."

Incorporating information technology into library science has forced curricular changes, but as Hildenbrand notes, although reinventing library education in an age of automation seems like an excellent idea, the history of library science suggests the need to be "vigilant about the impact on women faculty, students, and librarians, and members of racial and ethnic minorities. Some sources already report a decline in female enrollment in library information science programs in recent years, linking it to computerization of the field."

In fact, Hildenbrand concludes that as library/information science draws increasingly on female paraprofessionals, "we come full circle. . . . A core of informally trained paraprofessionals, mostly women, performs tasks formerly thought of as professional, many involving the delivery of service, while college and university programs will prepare a mostly male group for elite positions."

Hildenbrand offers a number of steps that can offset the slide away from the traditional values of librarianship, including equity, while still moving forward to modernize and automate the field—

- More and better data is needed at every level. How do librarians do their jobs? Who employs them? Faculty data should include salary differentials and appointment types.
- Professional organizations with an interest in library information science education and diversity issues should be pressured to expand their data collection activities by covering more topics and by defining data more carefully.
- Foundations must investigate the demographic implications of their reforms, because the history of foundation intervention in library education shows significant anti-woman bias. They must reconcile automation and equity issues so that reforms involving heavy emphasis on automation do not become an excuse for heightened gender (and racial and ethnic) stratification.

women learning: new research

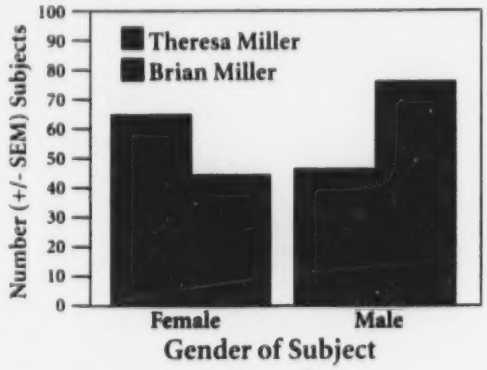
The Role of Gender in Email Advice to Undergraduates

By Charmion Gustke, PSEW Project Assistant

As new classes of graduate students arrive on campus this fall, we assume that they have chosen their paths prepared and inspired by the professors who have guided them as undergraduates. But how prepared are they? Have some students been encouraged to pursue particular fields because of their gender? And have other students been discouraged from pursuing advanced degrees?

How can academic institutions provide non-biased advice to undergraduates to encourage more students to pursue graduate work in science and engineering? The work of Rhea E. Steinpries at the University of Wisconsin-Milwaukee, suggests several ways to promote consciousness regarding gender bias.

When undergraduates are considering continuing their educations on the graduate level, they often seek the advice of professors in their undergraduate departments, or they reach out to professors at other universities in the departments to which they may apply. A pioneering line of research in the mid-1980s suggested that women and men often seek the guidance, when available, of professors of the same gender (Ekrut & Mokros, 1984; Farylo & Pauldi 1985). During the 1990s, Rose Ragins and John Cotton (Ragins, 1989, 1995; Ragins & Cotton, 1991, 1993), researched mentoring practices and found that barriers to academic counseling may exist for women because of the disproportionate number of senior men in many science and engineering departments. Many women are forced to look for a male mentor or become discouraged by the lack of women in their departments. Furthermore, gender stereotypes often dissuade women from taking an active role in pursuing an advising relationship with a male mentor (Hill, Bahniuk, & Dobos, 1989).



Rhea Steinpreis, with the aid of Katie Andrews, Monica Riley, Dawn Ritzke, and Theodore McDonald, conducted a study of 400 male and female psychologists at universities across the country to determine if gender plays a role in the quality and quantity of e-mail advice given to undergraduates considering applying to graduate school.[1]

Two "pseudostudents," Brian Miller and Theresa Miller, names selected because they clearly mark the gender of the applicant without inducing age or race bias (Kasof, 1993), were created for the project. "Brian" and "Theresa" used emails to ask professors if they would be willing to look at their credentials (GRE scores and grade point average) for the purpose of providing advice about their chances of getting into a graduate program at the professor's school. The professors were not told they were participating in a study until their final e-mail communication, at which time they had the opportunity to withdraw their data.

The scholastic information given by "Brian" and "Theresa" was either outstanding, average, or poor. The results of the study indicate that female faculty were significantly more likely to consent to examine and respond to the data given by "Theresa" and male faculty members were more likely to respond and examine the data given by "Brian." Once the faculty member agreed to offer advice, gender had no impact on the length or quality of advice given to the pseudostudent. The length and quality of advice given was based on the pseudostudent's academic credentials. Both male and female faculty were equally likely to encourage or discourage "Brian" or "Theresa" based on their GRE scores and grade point average, although male faculty were more likely to refuse to review the data and female faculty were more likely to offer neutral responses.

There are several short and long-term implications of this data. What is perhaps most problematic in these findings is that professors are initially more willing to give advice to students of their same gender. Because of the relative scarcity of women faculty in nearly all science and engineering departments, "female students may have a greater difficulty finding an advisor or mentor" according to Steinpreis. As the members of the Steinpreis's research team suggest, faculty of both genders need to be more aware of what may be a conscious or unconscious discrimination in their mentoring relationships.

Steinpreis suggests that science and engineering departments need to be more creative in providing non-biased advising. Departments should develop and widely distribute pamphlets about graduate school applications, requirements, and resources. Steinpreis has created a widely circulated pamphlet for "getting into graduate school in psychology," which may be accessed on the web at http://www.uwm.edu/~rhea/newpage11.htm. This type of information should be posted on bulletin boards in common areas and on web pages so students of either gender can easily access information. Steinpreis and her collaborators conclude that this information should be given to science and engineering majors as early as possible so that they may have adequate time to make necessary preparations for graduate school. Of course, these suggestions should not replace the valuable one-on-one advice of an experienced and qualified mentor.

Note

The methods and results of this study are found in "The Impact of Gender on the Quality and Content of E-Mail Advice Professors Give to Students Applying to Graduate School," in *The Journal of Women and Minorities in Science and Engineering*, vol. 6, pp. 33-43, 2000. All information in this *OCWW* article has been based on the above article and on correspondence between the author and Steinpreis.

women's leadership

Anita Borg: A Syster in Cyberspace

Anita Borg is president and founding director of the Institute for Women and Technology (IWT) in Palo Alto, Calif. She is also a member of the research staff in the office of the chief technologist at Xerox's Palo Alto Research Center and is on full-time loan to IWT. The Institute is an experimental research and advanced development organization focused on increasing the impact of women on technology and increasing the positive impact of technology on the world's women.

In 1987, Borg founded Systers, *a private web and email accessible electronic network of over 2,500 technical women from over 38 countries in the computing field. It provides information and rich connection for mentoring and mutual support of technical women in the computing field. (www.systers.org)*

***OCWW:** In an interview with Wired Online you said you were frightened about the future Are people working hard enough to ensure women are at the table making decisions related to technology? What more needs to be done?*

Borg: We have a whole slew of scattered programs, and there is no way to find out which are successes and which are failures. The lessons from these programs get lost because the money runs out. Programs get seed funding, people try a variety of approaches, and then there's no more money. You can't share the results or take it further. We need to find a way to share that information so we have an easily searchable database of information about what works and what doesn't when it comes to information technology in all its shapes and forms.

***OCWW:** You've done a number of workshops that challenge women to construct a world in their own technological image. What kinds of worlds do women envision?*

Borg: Rather than start with the technology, we start with the world and ask women to think of issues that will be coming up in the next 5, 10, or 20 years. Then we ask, "How might technology help us?"

Technology is much less individualistic for women. It solves communication problems or works for the whole family. We get a sense that technology is good when used by a group. We focus on technology in support of the family because we're bringing together both technical and non-technical women and family is a common platform. Interestingly, very few women describe technology uses in the entertainment area. In a future workshop we'll look at technology in support of businesses of the future.

***OCWW:** How do you persuade women that technology is not a thing to be feared, but something that they use every day of their lives and therefore need to claim?*

Borg: The people attending our workshops are artists, construction workers, kids, and housewives. In our workshops we have a session where people talk about all the technologies that have a potential impact on our lives

Borg has contributed a number of innovations in the field of computing. The Grace Hopper Celebration is a technical conference celebrating the achievements of women in the computing field. In 1994, its first year, it drew 450 attendees to Washington, D.C. and received financial support from the National Science Foundation, the Office of Naval Research, and over a dozen major corporations. In 1997, the conference attracted 600 attendees and was supported by 35 agencies and corporations. The next Grace Hopper Celebration occurs Sept. 14–16, 2000, in Cape Cod, Mass.

One of the many projects sponsored by IWT is *Technology in Support of Families* that draws diverse groups of women from the local community including multiple generations within families. This workshop helps women to explore ways to bring their full experience to the design table. Intergenerational women in families are empowered to describe their needs in ways that have value and they may take a more active role in technical endeavors.

A new project that showcases IWT's ongoing efforts to amplify women's voices in technology is the Virtual Development Center (VDC). This network of college-based collaborative development centers brings together faculty, students, and professionals to generate innovations and develop prototypes and products. The VDCs engage women in new ways and train students to listen to people outside of the classroom for inspiration. Each center makes a multi-year commitment to integrate the VDC model as an element in their effort to recruit and retain women and to inspire academic projects based on women's ideas. Women from the community are involved at a minimum as idea generators and ideally as partners in projects related to the development of technology based on women's ideas. Teamwork and collaboration within and among groups across centers is valued and rewarded. Women from IWT's industry sponsors play a key advisory role to center projects.

The first centers were launched in 1999 at Purdue, MIT, Texas A&M, and Santa Clara. They explored the topic *Technology in Support of the Family of the Future*. The project continues to receive significant support from Hewlett-Packard Corporation, Sun Microsystems, IBM, Xerox, and the National Partnership for Advanced Computational Infrastructure (NPACI). In 2000, four new centers will be added to the network. For information about creating an IWT Development Center at your campus visit www.iwt.org/contactus.html.

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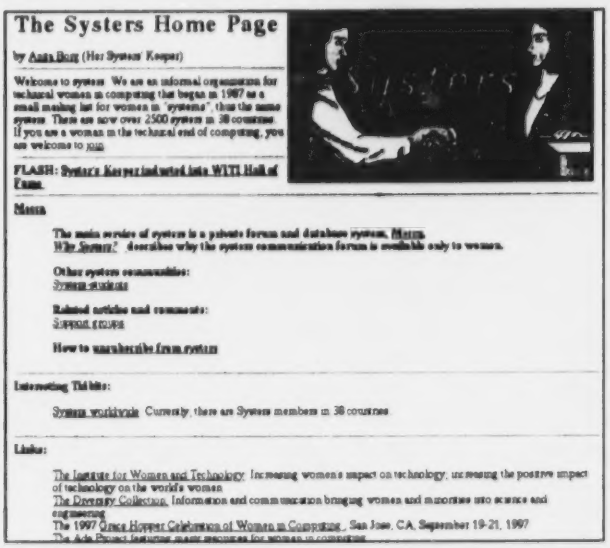
today. We've come up with a list of 200 of these ranging from contact lenses to pagers. This shows people that technology is not separate from life, but already intricately bound up with it. The larger challenge is getting them to have an opinion about technology.

Women who see themselves as experts in their own lives realize that technology is life and they can have an opinion. By engaging a range of individuals in dialogue about technology we are able to bring new voices to the table. We talk about how technology might be used and ask them to be imaginative. What we're identifying are the things that are important and what we ought to be working on. People working on technology can't get beyond their own narrow view unless they have additional perspectives. It's not true that smart guys can figure out what everyone else needs.

As an example, a woman was working in a research group in a large company investigating the problem of smart house technology. The woman said, "I'd like my house to be smart enough to call up your house and find out who refinished your floors." Her male colleagues shot her down and trashed her self-confidence.


The Systers Home Page
by Anita Borg (Her Systers' Keeper)
Welcome to systers. We are an informal organization for technical women in computing that began in 1987 as a small mailing list for women in "systems", thus the name systers. There are now over 2500 systers in 38 countries. If you are a woman in the technical end of computing, you are welcome to join
FLASH: Systers Keeper inducted into WITI Hall of Fame
Mezza
The main service of systers is a private forum and database system, Mezza.
Why Systers? describes why the system communication forum is available only to women.
Other systers communities:
Systers statistics
Related articles and comments:
Support groups
How to unsubscribe from systers
Interesting Tidbits:
Systers worldwide Currently, there are Systers members in 38 countries
Links:
The Institute for Women and Technology Increasing women's impact on technology, increasing the positive impact of technology on the world's women
The Diversity Collection Information and communication bringing women and minorities into science and engineering
The 1997 Grace Hopper Celebration of Women in Computing, San Jose, CA, September 19-21, 1997
The Ada Project featuring many resources for women in computing

OCWW: *Why is it important to think about new technology designs that bring people together in physical spaces such as a family computer rather than those that connect through separate spaces such as personal computers?*
Borg: Various people have expressed the impact of individual technology on our social culture. While individual technology is useful, we haven't looked clearly at the possibilities for technology that supports social endeavors we think are important. Because technology is the way it is now, there is something in its nature that destroys social interaction. This has nothing to do with the underlying technology. We need to explore the social avenues we want to impact. Technology isn't what it is, but rather what it can be.

OCWW: *What grade would you give to higher education for its role in encouraging women to get involved in what information technology has to offer?*
Borg: Overall I'd give higher education a 'D.' There are some wonderful exceptions and some women who have done very well, but most faculty members don't really care or don't know how to get involved in encouraging women to explore the avenues that information technology has to offer.

OCWW: *You make an eloquent case for how important it is to persuade women to get in on the ground floor of designing new technologies because if left to the boys, especially those who traditionally play with technology to spy, kill, and maim, we might have a chilling Orwellian society.*
Borg: If you think of it as an incredibly diverse culture, we should be using the richness we have to increase the benefit of technology. The future of technology depends on whether we really decide it's important, if the nation sees it as important. If women had been pursuing computer science degrees at the same rate as men—if the 37% in 1984 had jumped to 50% and that had continued—there would be no workforce shortage in information technology. Women would be making up that gap and would be having the sorts of impact on the business and what's being created. People need to recognize this.

If we change advertising to show that information technology is cool to do for both girls and boys, then we can begin to create a diverse information technology workforce. There have been piles of reports over the last 25 years about the lack of equity in information technology, but it hasn't become a national imperative. Now that we're at the point where it's critical to our economic advancement and national security, suddenly the matter of equity is being addressed. It's true women have moved into some very senior positions, but whether that's enough I don't know.

Borg's many accomplishments include being appointed to the the congressionally mandated Commission on the Advancement of Women and Minorities in Science, Engineering, and Technology in July 1999. She is a Fellow of the Association for Computing Machinery (ACM) and a member of the Board of Directors of the Computing Research Association (CRA).

In 1999 Borg received the Melitta Bentz Women of Innovation and Invention Award and the Outstanding Women's Achievement Award presented by Forbes and IBM. She was also recognized as one of the Smart 50 People by Smart Reseller Magazine and as one of America's 100 Most Important Women by Ladies Home Journal. In 1998 Borg was inducted in to the Women in Technology International (WITI) Hall of Fame. In 1995 she received a Pioneer Award from the Electronic Frontier Foundation and the Augusta Ada Lovelace Award from the Association of Women in Computing for her work on behalf of women in the computing field.

While at Digital Equipment Corporation from 1986–1997, she developed and patented a performance analysis method for high-speed memory systems. At its Network Systems Laboratory, she developed MECCA, a system for communicating in virtual communities.

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from where I sit

Editor's Note: The following new column will offer a variety of vantage points on OCWW thematic topics. This issue features a graduate student perspective. Charmion Gustke, who is finishing her doctorate at George Washington University, explains how the realities of technology have altered our expectations of feminist critiques of technology.

Feminist Technologies of Gender: Where are we now?

By Charmion Gustke

Cyborg imagery can suggest a way out of the maze of dualisms in which we have explained our bodies and our tools to ourselves. This is a dream not of a common language, but of a powerful infidel heteroglossia. It is an imagination of a feminist speaking in tongues to strike fear into the circuits of the super savers of the New Right. It means both building and destroying machines, identities, categories, relationships, spaces, stories. Although both are bound in the spiral dance, I would rather be a cyborg than a goddess.

Donna Haraway, "A Manifesto for Cyborgs" (1985)[1]

In the spring of 1994, during my first semester of graduate school as a Ph. D. candidate in a cultural studies program, I enrolled in a required course entitled "20th Century Critical Theory." Taught by a renowned postmodernist, the class quickly moved through the complexities of romanticism, early 20th century feminism, realism, and modernism without taking a breath until we reached what would be the denouement of the course – postmodernism with a feminist edge. It is here that we read Lyotard, Deleuze and Gauttari, Jameson, Butler, Baudrillard, Foucault, Harstock, and, of course, Haraway. The class included eight white women, two women of color, and two white men, all between the ages of 22 and 30. Our differences did not seem to divide us as it did in my anthropology or literature classes. We were all captivated by the emancipatory ideals charted by scholars such as Haraway and Deleuze and Guattari, on the frontiers of technology. We celebrated the genderless, bodiless, nationless possibilities technology was offering.

Haraway's cyborg was my favorite technological transmutation, luring me into an endless realm of identities and potentialities. I was hooked, no longer bound by the confines of my sex, race, and class. Haraway delineated news ways for women to access labor, to organize, to take responsibility, and "to reconstruct the boundaries of daily life, in partial connection to others, in communication with all our parts"[2] through access to technology. On the frontier of technology there were no rules, no weight restrictions, no limits, no laws, no father, no fashion police, only interaction. With that interaction came the unlimited possibilities of knowledge and power. Haraway offered us an opportunity to identify a feminist agenda on our own terms rather than on the coat tails of the feminists whose determination made our newfound ideology a possibility.

A New Perspective

Turning back to this topic six years later, I am forced to question the realities of technology and its compatibility with the needs of feminists in the 21st century. Technology is a material and symbolic production that incorporates the lived experiences of many while simultaneously excluding "others." And it is, of course, one of the many projects of feminism to investigate and critique the exclusion of women and the ways in which those exclusions correlate with the complexities of race, class, and gender construction. But if technology involves practices of exclusion, then isn't the cyborg also participating in these practices? As a sheltered graduate student, the fact that the cyborg could be seen as a privileged creature did not enter my mind, but now as I face the difficult task of supporting myself and writing my dissertation, I am more conscious of the class restrictions constructing and confining us.

Furthermore, my interest in postcolonial studies has opened my eyes to the complexities of race and class, and to the experiences of women of color within and outside the boundaries of the United States. Rey Chow reminds us that first world gender politics often employ sex and gender as erasable terms that are "pointless" in many non-western cultures and are possibly politically dangerous.[3] Chow also concedes that the fluid technoculture of the cyborg, when not transhistorical and global, offers tools with which third-world women may resist the kinds of violence that confine them to traditional roles. Technology is thus a matter of responsibility, a responsibility we must take even when engaging in the most innocent Internet correspondence.

Technology Transforms Knowledge

Many of us identify The Internet as technology's greatest gift, but as Haraway states in *Modest_ Witness @Second_Millenium* (1997), "E-mail is only one of the multiple passage points—both distributed and obligatory —through which identities ebb and flow in the Net of technoscience."[4] In the view of many contemporary theorists, technology with all its networks, media, and offspring, is an indeterminable mass of conglomerates and mergers, ruled by market economies and confused by the intrusion of the law. Our frontier has become not only gentrified, but also bound by consumerism and competition. In *Data Trash*, a comprehensive critique of cyber-culture, Kroker and Weinstein suggest "the computer industry is in an intensive phase of creative destruction." The Internet, they add, "is being brought into actuality through the offices of ruthless capitalist competition, in which vast empires fall and rise within a single decade (Big Blue/ Microsoft)."[5]

What once appeared as a knowledge network of creativity and communication for all who desire new arenas of dialogue is now a burden wiring

us to the virtual class and thus further marginalizing minorities who are not "wired in." We are no longer Haraway's cyborg or Delueze and Guattarri's "Body Without Organs," but bodies utilized to our utmost capacity. Becoming machine, in the language of Deleuze and Guattari, has demanded that we produce, network, communicate, and engage in the commercialization of knowledge and information as it flashes across the screens of our lives.

In 1976, Jean-Francois Lyotard warned, "knowledge and power are simply two sides of the same question: who decides what knowledge is, and who knows what needs to be decided? In the computer age, the question of knowledge is now more than ever a question of government."[6] The computer industry, according toLyotard, has marketed knowledge to the point that knowledge is information, chosen, owned, censored and exchanged at random. Knowledge has become a commodity that is created by means of a transparent production, dividing society into those who have access to knowledge through technology and those who do not. According to Kroker and Weinstein, the operating systems of technology, often motivated by political, financial, and national sentiments decide what information goes to whom and what class of people will be privy to the inner working of cyber space–these are the virtual class.[7]

Feminist Critiques

Contemporary feminists' critiques of technology express the difficulty of taking a stand for or against technology. Viewpoints are often conflicted on this subject because of the many positive outlets to which women have gained access because of technological advances in medicine, communication, science, and economics. Linda Howell explains, in "The Cyborg Manifesto Revisited," that the cyborg's manifesto offers both complicity and resistance for feminist technoculture:

> ...If popular cyborg narratives disperse gender hierarchies across the boundaries between human, animal, and machine, such dispersal is nevertheless recoupable on the battlegrounds of women's bodies today. At stake in technocultural feminism are continuing questions of who gets to do the recuperating, on whose terms.[8]

Fragmentation is characteristic of technology. Some of us have succeeded because of it, but Howell demands that we question the terms and value of our own multiplicity as we participate in the construction and selection of knowledge. Technocultural feminism, as Howell sees it, allows for new kinds of knowledge about the machines we interact with on a day-to-day basis. It also creates a politics and language with which we may "deploy that knowledge in tactically subversive and (de)constructive ways."[9] Donna Haraway offers similar advice in a recent book-length interview, *How Like a Leaf*.[10] She says knowledge is a responsibility that "you can't forget." Knowledge is not optional, and technology is the means through which we engage with and in the world.[11]

Technological engagement is certainly an aspect of my life that I can't ignore as I sit in front of my computer almost ready to e-mail this article to my editor, already having paid my bills, researched a future trip, and talked with friends over the Internet. Yet do these tasks allow me to experience the liberation, the power, and the pleasures of the cyborg? Is the cyborg identity a possibility in the 21st century despite the burdens of technology?

Technocultural feminism allows for new kinds of knowledge about the machines we interact with

Always a good student, I turn to the source, to Haraway herself, to answer these questions, and in doing so I find that the cyborg is still not only an option, but a necessity if women are going to actively participate in the growing field of technology and its many networks of knowledge and information. Haraway emphatically states:

> Let's really look into the ways we think of ourselves as information processing devices in a way that is influenced by communications theory, or look at the way cybernetic control systems shape military doctrine or shape industrial labor process. "Cyborg" is a way to get to all the multiple layers of life and liveliness as well as deathliness within which we live each day. So instead of giving it up because it has become too famous let's keep pushing it and filling it.[12]

References

1. Haraway, Donna. "A Manifesto for Cyborgs: Science, Technology, and Socialist Feminism in the 1980's." In Linda J. Nicholson, ed., *Feminism/Postmodernism*. New York: Routledge, 190-233, 1990.
2. Haraway, "A Manifesto for Cyborgs," 223.
3. Chow, Rey. "Postmodern Automatons." In Judith Butler and Joan W. Scott, eds., *Feminists Theorize the Political*. New York: Routledge, 87, 1992.
4. Haraway, Donna. *Modest_Witness@Second_Millenium.FemaleMan_Meets_OncoMouse: Feminism and Technoscience*. New York: Routledge, 4, 1997.
5. Kroker, Arthur and Michael Weinsten. *Data Trash: The Theory of The Virtual Class*. New York: St. Martin's Press, 14, 1994.
6. Lyotard, Jean-Francois. *The Postmodern Condition: A Report on Knowledge*. Geoff Bennington and Brain Massumi, trans. Minneapolis: Minnesota UP, 8–9, 1993
7. Kroker and Weinstein, 14.
8. Howell, Linda. "The Cyborg Manifesto Revisted," In Richard Dellamora, ed., *Postmodern Apocalypse: Theory and Culture Practice at the End*. Philadelphia: University of Pennsylvania Press, 215, 1995.
9. Howell, 216.
10. Haraway, Donna. *How Like a Leaf: An Interview with Thyrza Nichols Goodeve*. New York: Routledge, 2000.
11. *How Like A Leaf*, 133.
12. *How Like A Leaf*, 136.

in brief

49 million
U.S. households will spend over $184 billion with e-commerce retailers by 2004—Forrester Research Inc.

1.3 million
new information technology workers will be needed by 2006—U.S. Dept. of Commerce.

400,000
information technology jobs are vacant today—META Group.

19%
of all women in the science and engineering labor force are minority women and 4.2% of all scientists and engineers in the labor force are minority women. The composition of minority women scientists and engineers in the labor force includes 1.3% African Americans, 0.6% Hispanics, 0.1% Native Americans, and 2.2% Asians—National Science Foundation.

28%
of all computer systems analysts were women in 1995 and just 31% were computer programmers—U.S. Dept. of Commerce.

15%
of newly hired faculty in 1998-99 academic year were women; 85% were men—Taulbee Survey.

$24,470
was the minimum salary reported for a nine-month, non-tenure track faculty position at top U.S. computer science departments. $180,000 was the maximum salary reported for a full professor at the same institutions—Taulbee Survey.

2%
of high school girls take a computer applications course; 6% of boys do—The Digital Workforce, U.S. Dept. of Commerce.

Building a Strong Domestic High-Tech Workforce

The Commission on the Advancement of Women and Minorities in Science, Engineering, and Technology Development has issued a call to action for U.S. industry, government, and academe to meet the growing need for workers skilled in science engineering, and technology. The commission, which released its recommendations in July, said the U.S. should recruit, train, and retain individuals for the domestic workforce among populations that are vastly underrepresented.

Specifically, women, minorities, and persons with disabilities represent a potential pool of the science, engineering, and technology workforce not being tapped. "We must ensure that we are utilizing the talent of our entire population—not just a narrow slice of it," said Connie Morella (R-Md.), the congresswomen who authored legislation establishing the commission. "As Americans, we have begun to recognize the problem, but until we give it priority on our national agenda, and until our scientific and technological workplace reflects our diversity, we are not working to our full potential as a nation."

Among the commission's recommendations:

- Create a strong early education foundation through the promotion of ongoing education reform efforts, including adoption of statewide standards in math and science.
- Promote greater access to higher education among diverse groups through targeted intervention efforts and increased financial support for students as they transition from high school to college and as they move from community colleges to four-year institutions.
- Promote greater parity in job retention, pay, and promotion by developing and disseminating a national model of a diverse workplace environment that successfully recruits, retains, and advances the careers of women, minorities, and persons with disabilities.
- Alter the public image of scientists, engineers, and high-tech workers through public/private partnerships that coordinate media and image campaigns which show positive and diverse images of science and technology workers.

For a copy of the commission's full report, *Land of Plenty*, call 703/306-0597, email cawm-set-info@nsf.gov, or visit www.nsf.gov/od/cawm-set.

WomenTech Project Underway

The Institute for Women in Trades, Technology & Science (IWITTS) has embarked on a three-year project funded by the National Science Foundation to increase the number of women enrolled and retained in science, math, engineering, and technology education. The WomenWorking Technical (WomenTech) project involves three community college demonstration sites and will disseminate nationally the project's successful strategies and best practices.

IWITTS is now located in Alameda, Calif. For information on the WomenTech project visit www.iwitts.com.

No Business for a Woman

Many women are deterred from applying to business schools in the early stages of their academic or professional careers according to a study released by Catalyst, a nonprofit research and advisory organization. The study was done in conjunction with the University of Michigan's Kellogg School of Business and the Center for the Education of Women at the University of Michigan.

The survey of 1,684 male and female master's degree recipients from 12 top-ranked business schools suggests that women are discouraged from pursuing a graduate degree in business by a shortage of role models in the business world and in business school faculty. Respondents also said women were discouraged from enrolling by a lack of confidence in their math skills. In addition, the report noted that employers failed to encourage their female employees to pursue an MBA.

Women obtain half of all undergraduate business degrees yet they account for approximately 30% of the student body in graduate business programs, a level that has remained consistent over the last decade. Women represent only 20% of the faculty for top-tier business schools, and only 7% of business school deans, according to the AACSB—International Association for Management Education.

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The study was conducted to investigate why women are under-represented in graduate business degree programs and to propose strategies that business schools can implement to make their programs more welcoming to women.

For more information visit www.catalyst-women.org and www.umich.edu/~cew/

Sweet Briar College: Most Wired Woman's College

Yahoo! Internet Life magazine has named Sweet Briar College the most wired women's college in the U.S. The college ranks sixth among most wired baccalaureate colleges in America, placing it ahead of all other women's colleges in the survey.

Criteria for the rankings fell into four categories: administrative services provided to students; support services provided to students; access to the Internet, to new equipment, and within classrooms and dorms; and general resources available to students.

Among Sweet Briar's high-tech trading points—all classrooms, dorm rooms, and faculty offices are connected to the campus's fiber-optic network; students receive unlimited storage space on the Web and on the network; and students with laptops can plug into the network anywhere on campus.

Drawing on Sweet Briar's strong computer and communications training, alumna Michela English recently took the helm of the new Discovery.com, an online company that leverages Discovery Communications Inc.'s portfolio of products to create a new presence on the Internet. English was named chairman of Sweet Briar's Board of Directors in the spring.

Academic Engineering and Discrimination

Nearly 30% of women at every level of teaching and academic administration say they frequently or very frequently experience discrimination as a woman in engineering academia, according to a survey by *Prism*.

Balancing work and family poses difficulties for many female academics as well, with almost two-thirds saying that it is either difficult or very difficult to maintain the balance. Family responsibilities have negatively affected the career advancement of 36% of respondents, and well over 33% say they are putting off—or have put off—having a family in order to advance their career.

Welfare Reform's Impact on Low Income Women in College

The Center for Women Policy Studies is studying the impact of TANF rules on women's ability to enter or remain in college. The study involves a series of individual in-depth interviews with TANF recipients and will explore how TANF rules such as time limits, work requirements, and required approvals of education plans, have affected women's educational goals and experiences.

The qualitative research study also investigates the barriers women face, their need for financial and emotional support as they pursue postsecondary education, and the positive factors that contribute to their success in college. Particular attention is paid to how women balance their work, school, and family responsibilities and how they believe colleges, caseworkers, and welfare agencies can be more supportive.

Results will be disseminated in a chapter in *Out of the Academic Closet: Poor Women, Welfare, and the Promise of Education*, edited by Vivyan Adair and Nesce Belken, Hamilton College. The scheduled publisher is Temple University Press.

Title IX Applies to Federal Education and Training Programs

On June 23, 2000, President Clinton issued the long-awaited executive order applying Title IX and other nondiscrimination laws to federally conducted education and training programs. The executive order was promised in 1997, on the 25th anniversary of Title IX. The order came out on the 28th anniversary of Title IX.

According to the Executive Order, "the Federal Government must hold itself to at least the same principles of nondiscrimination in educational opportunities as it applies to the education programs and activities of State and local governments, and to private institutions receiving Federal financial assistance."

This order does not apply to members of the armed forces, military education or training programs, or authorized intelligence activities. Members of the armed forces, including students at military academies, will continue to be covered by regulations that currently bar specified forms of discrimination that are now enforced by the Department of Defense and the individual service branches.

The complete text of the Executive Order can be found in the *Federal Register*.

on the web

www.hsph.harvard.edu/grhf/WoC/
The Women of Color Web explores the intersections of gender and race on topics such as feminism, sexuality, and reproductive health and rights. Site includes links to organizations, discussion lists, bibliographies, and syllabi.

members.tripod.com/~Barbara_Robertson/Wo men.html
This women and disabilities resources site offers links to general and economic resources, information on African American, older women, and lesbians with disabilities, and abuse of women with disabilities.

www.usc.edu/isd/archives/oneigla
The One Institute: International Gay & Lesbian Archives provides research materials on gay, lesbian, bisexual, and transgendered heritage and concerns. The Lesbian Legacy Collection includes listings of books, periodicals, special collections, and bibliographies. The site also features profiles of key women in U.S. lesbian history.

www.amazoncity.com/technology/museum/index.html
The Museum of Women in Science and Technology features biographies of 12 women in such fields as mathematics, astronomy, computer science, anthropology, and medicine.

www.academic.org
The Women's College Coalition presents "Expect the Best from a Girl," a web page with role models in non-typical occupations, multiple resources for girls and adults, and suggestions on how parents can encourage their daughters yet battle stereotypes.

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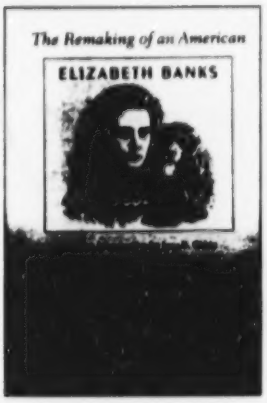
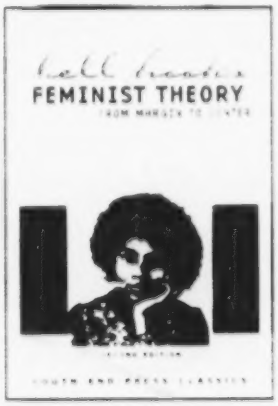
for your bookshelf

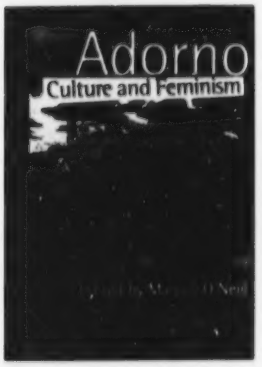
Humanities



The Remaking of an American, by Elizabeth Banks (University Press of Florida, 2000). Accompanied by a comprehensive introduction by Jane S. Gabin, Banks' 1928 autobiography provides insight into the professional career of a dedicated American journalist in London. Banks documents major political issues of her time: World War I, the suffrage movement, social class consciousness, and the effect on the U.S. of the great wave of immigration. A regular contributor to the *Daily News*, *Punch*, *St. James's Gazette*, and *London Illustrated*, Banks also created a sensation in London by recording her observations on the plight of the lower classes. $19.95, paper. (University Press of Florida, 15 N.W. 15th St., Gainesville, FL 32611; http:/www.upf.com.).



Feminist Theory from Margin to Center, by bell hooks (South End Press, 2000). The second edition of this essential feminist classic introduces a new generation of feminist readers to the revolutionary theories of bell hooks. After almost 20 years, this text continues to bring fresh insight to "old issues," while reminding seasoned activists of the urgent need for critical reflection and action. Throughout these essays, hooks examines the core issues of sexual politics, including political solidarity among women and men as partners in the struggle to end violence. She insists that feminism must become a "mass-based political movement" if it is to have a transformative impact on our society. $16.00, paper. (South End Press, 7 Brookline St., #1, Cambridge, MA, 02139).

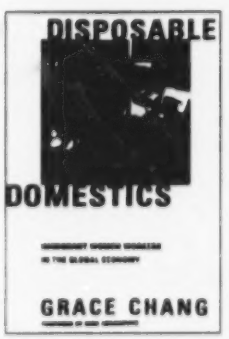


Adorno, Culture and Feminism, edited by Maggie O'Neill (Sage Publications, 1999). This collection explores how feminists can both harness and develop Adorno's ideas by displaying the complex ways in which gendered relations and cultural practices intersect. More than 30 years after his death, the essays in this text illustrate the impact of Adorno's work for feminists. While Adorno's work focuses on the concept of paralysis in a changing and challenging society, these essays show how his work also offers liberating possibilities for art and aesthetics. This collection shows how Adorno's central concepts—commodification, authenticity, the culture industry, and negative dialectics—can be used productively in feminist thinking. $22.95, paper. (Sage Publications, 6 Bohill St., London EC2A 4PU; info@sagepub.com).

Social Sciences

Gender at Work: Organizational Change for Equality, by Aruna Roa, Rieky Stuart, and David Kelleher (Kumarian Press, 1999). Using recent research on gender equity and patterns of discrimination within organizations, this volume analyzes the institutional barriers to gender equality. In-depth examples from diverse organizations and case studies from many countries raise new questions about how we advocate for gender-responsive policies and practices. These cases include BRAC, a large Bangladesh development organization; CIMMYT, the international wheat and maize research center in Mexico; and The Body Shop, a multinational beauty product organization. $23.95, paper. (Kumarian Press, Inc., 14 Oakwood Avenue, West Hartford, Connecticut 06119).

Talking Feminist Politics: Conversations on Law, Science and the Postmodern, by Eloise Buker (Rowman & Littlefield, 1999). Centering her analysis on American feminist work since 1980, Buker uses feminist legal conversations to refine our understanding of justice and feminist science to examine the complex relationships between truth, politics, and postmodern feminism. Buker demonstrates how feminist theories offer strategies for change for U.S. citizens today. The text is motivated by Buker's desire for women to achieve full citizenship. $24.95, paper. (Rowman & Littlefield, 4720 Boston Way, Lanham, Maryland, 20706; www.rowman-littlefield.com).



Disposable Domestics: Immigrant Women Workers in the Global Economy, by Grace Chang (South End Press, 2000). Chang portrays how women workers, such as caretakers and factory workers, facilitate the operation of the global economy. She demonstrates how global capital and international policy are linked with domestic policy to trap immigrant women in their paradoxical position as the most valuable and the most vulnerable workers in the U.S. today. Chang documents the essential role immigrant women play in the U.S. economy as workers who clean houses, offices, hotel rooms, and also take care of our elderly and children. $18.00, paper. (South End Press, 7 Brookline Street, #1, Cambridge, MA, 02139; www/lbbs.org/sep/sep.htm).

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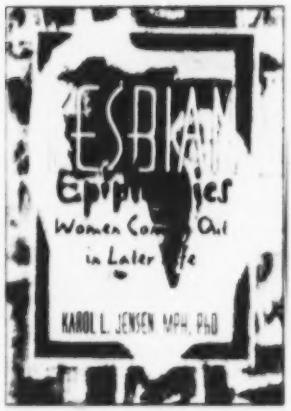
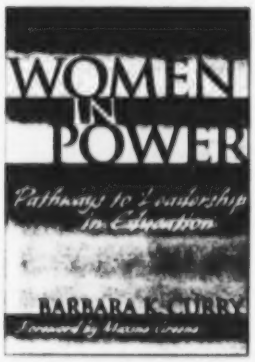


Lesbian Epiphanies: Women Coming Out in Later Life, by Karol L. Jensen (Harrington Park Press, 1999). By quoting extensively from interviews of lesbians and bisexuals who had entered into heterosexual marriages, Jensen offers insight and analysis about the experiences and difficulties of women who discover and reveal their newfound lesbian sexuality later in life. Throughout the text, Jensen draws from a wide range of critical concepts and theories, providing the reader with a phenomenological understanding of self-identity and subjectivity. Her focus, however, is not on the specific identities of her subjects, but on the process by which they adopt these identities. $19.95, paper. (The Haworth Press, 10 Alice St., Binghamton, NY, 13904; www.haworthpressinc.com).

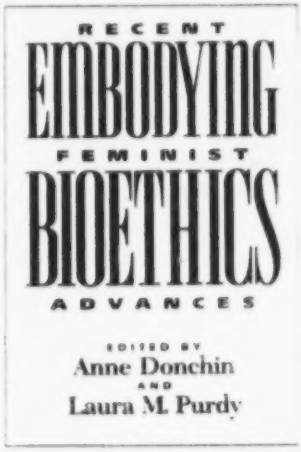
Campus and Classroom



Women in Power: Pathways to Leadership in Education, by Barbara K. Curry (Teachers College Press, 2000) Using case studies of eight high-level women, Curry approaches leadership as an interdisciplinary art. She urges us not to "force-fit" the accomplishments of women into traditional male leadership models. Rather, she suggests that we consider women leaders on their own terms. Curry moves beyond traditional conceptions to examine leadership as a fluid, adaptive process closely entwined with adult development. $21.95, paper. (Teachers College Press, 1234 Amsterdam Ave, New York, NY 10027).

Women as Learners: The Significance of Gender in Adult Learning, by Elisabeth Hayes and Daniele D. Flannery with Ann K. Brooks, J. Tisdell, and Jane M. Hugo (Jossey-Bass Publishers, 2000). The authors explore the influence of gender on learning and consider the complexities of culture, context, and power. Through adult women's learning in school, work, home, and community, this text demonstrates how often social context and politics are ignored in educational theory and practice to the detriment of women learners. The authors also offer specific recommendations to improve all types of formal and informal adult educational programs. $34.95, cloth. (Jossey-Bass Publishers, 350 Sansome St., San Francisco, CA 94104; www.joseybass.com).

Science and Technology



Embodying Bioethics: Recent Feminist Advances, edited by Anne Donchin and Laura M. Purdy (Rowman &Littlefield Publishers, 1999). This volume brings together the labors of feminist scholars from diverse backgrounds to raise critical and cutting edge questions about feminism's encounter with bioethics. The essays in this text shift theory and practice from its preoccupation with abstract individuals to the concrete particularities that shape the lives of socially situated humans. Among the subjects explored are the care/justice debates, transforming bioethics, reproduction, and less discussed issues such as reproductive health problems in developing countries. $23.95, paper. (Rowman &Littlefield, 4720 Boston Way, Lanham, Maryland, 20706; www.rowmanlittlefield.com).

The Good-Natured Feminist: Ecofeminism and the Quest for Democracy by Cartriona Sandilands (University of Minnesota Press, 1999). In this comprehensive text, Sandilands inaugurates a sustained conversation between ecofeminism and recent writings in feminist postmodernism and radical democracy. In Part I, Sandilands delineates the development of identity within ecofeminism, the social movement context in which development has taken place, problems it has created for ecofeminist theory, and the ways in which identity politics can be reoriented. In Part II, Sandilands explores points of the "transformative promise" within ecofeminism when it is viewed as a radical democratic project. $19.95, paper. (University of Minnesota Press, 111 Third Avenue South, Suite 290, Minneapolis, MN, 55401; www.upress.umn.edu).

Women's Studies Quarterly: Connecting Women's Studies and Women in Science and Engineering, edited by Sue V. Rosser (The Feminist Press, 2000). Women have always been scientists, but over the centuries their contributions have been unrecognized, limited, and thwarted by unequal resources and opportunities. While conditions have improved, crucial questions remain: Why do talented women infrequently pursue careers in fields such as computer science and engineering? Does science education privilege an inflexible epistemology that may alienate women? Are the sciences disconnected from contemporary society? How has feminism changed scientific practice? This issue broadens the dialogue between women's studies and the sciences, and explores new methods and approaches to reduce the masculine bias in scientific inquiry and science classrooms. $18.00, paper. (The Feminist Press, 365 Fifth Avenue, New York, NY, 10016; www.feministpress.org).

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institutional change

Engendering Health Research

In the early 1990s, Bernadine Healy, then director of the National Institutes of Health (NIH), pressed hard for the inclusion of women and minorities in all NIH-sponsored clinical research. In 1994 NIH revised the research guidelines to require analysis of clinical trial outcomes by gender.

A new study published in the *Journal of Women's Health & Gender-based Medicine* (Vol. 9, No. 5, 2000) suggests that while women are now being included in research trials, only a small percentage of clinical trial results are analyzed in terms of the impact gender may have on how the data is understood or used. The authors recommend that the onus is on the clinical research community to get women to participate in studies, whether through increased public outreach efforts, increased funding from NIH or home institutions so that child care and transportation are available to participants or through better efforts to retain women who are recruited.

One of the difficulties, according to the study's lead author Regina Vidaver, program director at the Society for Women's Health Research, is funding itself. "Caps on clinical research funding make it difficult for researchers to include women because providing such things as child care may put them over the top of their funding," explains Vidaver.

The study examined original research reports published between 1993 and 1998 in the *New England Journal of Medicine*, the *Journal of the American Medical Association (JAMA)*, the *Journal of the National Cancer Institute*, and *Circulation*. The authors conclude that for journals read by the broad medical community, such as the *New England Journal of Medicine* and *JAMA*, significant progress in the inclusion of women and analysis by sex of the subjects has not yet occurred.

"This finding is especially serious considering the amount of time that has passed since the first NIH guidelines were introduced," the authors contend. "It is unclear whether the guidelines are being overlooked by investigators, being ignored by journal editors, or not being enforced by the NIH."

Advocates for Women's Health Research

To heighten awareness about the importance of including women in health research, the Society for Women's Health Research has pushed Congress to pass a bill that establishes offices of women's health in a number of government agencies including the U.S. Department of Health and Human Services, the U.S. Food and Drug Administration (FDA), and the Center for Disease Control (CDC). These offices would be housed in the office of the director for each agency and the bill would also set up a coordinating council to oversee the offices.

"These offices keep reminding people and raising their awareness that there are gaps and inequities in research," says Roberta Biegel, director of government relations at the Society for Women's Health Research.

The society also manages the Women's Health Research Coalition (WHRC), an advocacy network of leaders at academic medical, health, and scientific institutions and other supportive organizations, united to encourage coordination and funding for women's health research. The WHRC promotes and encourages financial support, both public and private, for women's health research and to effect changes in policies and research priorities to advance a quality women's health research agenda, emphasizing interdisciplinary approaches.

For the current year, the WHRC has focused its attention on four issues. The first is obtaining increases for women's health and gender-based research commensurate to the rate of increase for all biomedical research. Their second priority is to assure adequate funding for the governmental offices that support women's health research in NIH, CDC, FDA, and elsewhere. A third priority is to encourage the enactment of statutory authorization for those women's health offices not currently authorized. Finally, the WHRC supports the expansion of the Building Interdisciplinary Research Careers in Women's Health (BIRCWH) Program begun last year. The program currently funds investigators at eight centers that conduct women's health research. For more information on how to participate in the BIRCWH program, visit the NIH web site (www.nih.gov).

Health Differences By Gender

The following list from the Society for Women's Health Research demonstrates the importance of studying the biological and physiological differences between men and women.

1. Alcohol: After consuming the same amount of alcohol, women have a higher blood alcohol content than men.
2. Smoking: Women smokers are 20% to 70% more likely to develop lung cancer than men who smoke the same amount of cigarettes.
3. Anesthesia: Women tend to wake up from anesthesia more quickly than men—an average of 7 minutes for women and 11 minutes for men.
4. Pain: Some pain medications (known as kappa-opiates) are more effective in relieving pain in women than in men
5. Heart Disease: Women are more likely than men to have a second heart attack within a year of their first attack.
6. Drug Reactions: Common drugs like antihistamines and antibiotics can cause different reactions and side effects in women and men.
7. Autoimmune Diseases: Three of four people who suffer from autoimmune diseases such as multiple sclerosis, rheumatoid arthritis, and lupus are women.
8. Sexually Transmitted Diseases: Women are twice as likely as men to contract a sexually transmitted disease and 10 times more likely to contract HIV during unprotected sex with an infected partner.
9. Depression: Women are two to three times more likely than men to suffer from depression—possibly because women's brains make less of the neurotransmitter serotonin.
10. Osteoporosis: After menopause women lose more bone than men. Of the population suffering from osteoporosis 80% are women.

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resource update

Conferences

Celebration of Women in Computing 2000, Sheraton Hyannis Resort, Hyannis, Mass., Sept. 14-16, 2000. Keynote speakers are National Science Foundation Director Rita Colwell and Exodus Communications CEO Ellen Hancock. Banquet speaker is Entrepreneur and Former President and CEO of Unisource Network Systems, Inc., Sheila Talton. Panel topics include "Computer and the Internet Security" and the "Future of Computing and The Changes Resulting from the Impact of Women." For more information visit www.iwt.org and click on "Conferences."

Women and Gender in Science, Medicine, and Technology, "Writing the Past, Claiming the Future: Women and Gender in Science, Medicine and Technology," St. Louis University, St. Louis, Mo., October 12-15, 2000. This conference is designed to further conversations begun at previous conferences among historians of science, medicine, and technology. Featured speakers include Neena Schwartz, Margaret Rossiter, Wanda Ronner, Margaret Marsh, and Ruth Schwartz Cowan. For more information, visit womeninscience.slu.edu or call 314/977-2910.

Partnerships and Possibilities—New Technologies, New Directions East Coast Technology Summit, Hynes Convention Center, Boston, Mass., Oct. 11-12, 2000, organized by Women In Technology International. For more information visit www.witi.com/center/conferences.

Now You See It, Now You Don't: Class in America, the New Jersey Project Fall Conference, Essex County College, Newark, N.J., Oct. 13, 2000. The conference examines class issues in the U.S. at the start of the 21st century and explores ways of getting students to think about class issues in the context of race/ethnicity, gender, and sexuality, across disciplines. Speakers include Barbara Ehrenreich, Manning Marable, Holly Sklar, Mark Ellis, Lise Vogel, and Leonard Vogt. For more information or to register contact the New Jersey Project at 973/720-2296 or nip@wpuni.edu

Workshops for Women 2000, Wellesley College, Oct. 20-22, 2000. Presented by the Worcester Women's History Project, these workshops examine the current status of women in the areas of health and relationships, education, government and politics, and work. Some workshops will focus on women's history in the mid-nineteenth century. Others will look at where women are at, how we got to this point, and what actions are needed to move us forward. Join us and continue the dialogue begun in 1850. Workshops feature Judy Jordan of the Stone Center at Wellesley College. For more information, visit www.worcesterwomen.com or send an email to wwhp@net1plus.com

International Perspectives: The Political, Social, and Economic Impact of Education for Women and Girls, a Forum to Explore How Women Create Change in Their Communities and in the World, Wyndham Hotel Washington, D.C., Nov. 17–18, 2000. This international biennial symposium sponsored by The American Association of University Women (AAUW) Educational Foundation explores how women have used their education to become catalysts for change in social, political, and economic arenas in their countries. While global in scope, the symposium will focus regionally on Africa, Latin America, the Pacific Rim, and countries of the former Soviet Union.

Topics include women's roles in literacy, higher education, and economic development; the role of women's nongovernmental organizations; and women in leadership and decision-making positions. Registration will be accepted by mail only until **Oct. 15, 2000**. For additional information, contact: International Symposium Coordinator, AAUW Educational Foundation, fax 202/463-7169; intsymp@aauw.org

Women Involved In Living And Learning (Will) Replication Workshop, University of Richmond, Va., March 22-24, 2001. Learn how to implement an innovative women's studies program that bridges academic and student affairs. The WILL model integrates a Women's Studies minor, internships, gender-related programming, and leadership development. As a recent assessment by the Wellesley College Center for Research on Women confirms, WILL "is an extremely effective vehicle for empowering and transforming female students." For more information see: **http://richmond.edu/WILL** or contact Faye Ladd, 804/289-8578; fladd@richmond.edu

Resources

Balancing the Equation: Where The Women And Girls Are In Science, Engineering, And Technology, the latest IQ report from the National Council for Research on Women considers the experiences of women in the sciences today. IQ: Women and Science presents an overview of recent debates, funding, and the opportunities and obstacles faced by girls and women in various scientific fields. For details visit www.ncrw.org/publications/pubs.htm

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resource divisions solicited. Data should be solicited from other sources such as from interviews with IT women directly through organizations such as Systers [see article on page 6 in this issue] or through collaboration with industry-focused centers such as the Institute for Women in Technology in Palo Alto, California."

AAC&U To Sponsor Third Bi-Annual Conference

Diversity & Learning:
Identity, Community, and Intellectual Development

Westin William Penn Hotel • Pittsburgh, Pennsylvania
October 26-29, 2000

The conference is designed both for working teams of faculty and administrators and for individuals interested in improving classroom teaching, changing their curriculum, fostering systemic change in their institutions, and investing more in local and global communities. It will draw upon a wealth of campus initiatives developed through AAC&U's American Commitments Initiative, its global diversity work, and the Ford Foundation's Campus Diversity Initiative.

Visit www.aacu-edu.org for more information.

About AAC&U

AAC&U is the leading national association devoted to advancing and strengthening liberal learning for all students, regardless of academic specialization or intended career. AAC&U is committed to making the aims of liberal learning a vigorous and constant influence on institutional purpose and educational practice in higher education.

On Campus With Women is the quarterly newsletter of AAC&U's Program on the Status and Education of Women (PSEW). With three decades of national leadership, PSEW is one of only two women's offices sponsored by a higher education association. PSEW's current priorities are curriculum and campus climate, promoting women's leadership, and disseminating new research on women and gender.

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Director PSEW Caryn McTighe Musil

Executive Editor Debra Humphreys

Editor Susan Reiss

Production Editor Ann Kammerer

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